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THE UNIVERSITY OF ALBERTA

THE MOTIVATION ANALYSIS TEST IN CLINICAL SETTING

by

© FRANCIS SHEN

A THESIS

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FACULTY OF GRADUATE STUDIES AND RESEARCH

The undersigned certify that they have read, and recommend to the Faculty of Graduate Studies and Research, for acceptance, a thesis entitled the Motivation Analysis Test in Clinical Setting submitted by Francis Shen in partial fulfilment of the requirements for the degree of Doctor of Philosophy in Counselling Psychology.

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ABSTRACT

The study was designed to investigate whether or not the Motivation Analysis Test could be used both as a diagnostic and a prognostic measure in a clinical setting. The experimental group consisted of samples of depressive, chronic schizophrenic and alcoholic patients. Thirty two patients were in each group. To complete the research design, 32 normals formed a control group to investigate whether the MAT would differentiate between the clinical groups and the control group.

Eighteen depressive patients completed the pre and post treatment study which was the second portion of the research. The purpose was to investigate whether the MAT reflected changes through treatment. The Beck Depression Inventory and the Hamilton Rating Scale were used as a more objective and quantitative manner of measuring change.

The data were analyzed by computer. The multivariate analysis of variance followed by the univariate analysis of variance was employed to investigate whether the MAT would differentiate between the distinctive features of the three clinical groups and the control group. The statistical methods used to investigate whether or not the MAT measures change through hospitalization were the t test and the correlation of residual gain scores.

Statistical differences beyond the .01 level were found among the MAT Motivation score profiles and the MAT Conflict score profiles of the three experimental groups and the control group. Significant differences of the MAT Motivation scores were found among the three clinical groups and the control group on the following factors: Self-concept Sentiment, Superego Sentiment, Narcism-comfort Erg, Assertiveness Erg and Total Motivation.

Significant results of the MAT Conflict scores among the three clinical groups and the control group were found on Home-parental Sentiment, Superego Sentiment, Sweetheart-spouse Sentiment, Narcism-comfort Erg, Mating Erg and Total Conflict.

The present study lent supportive evidence to Cattell's contention that the MAT Total Motivation score is a measure of mental health and that the meaning of the Total Conflict score is an index of psychiatric maladjustment.

The study shed light on the potential use of the MAT as a diagnostic but not as a prognostic measure in the clinical setting. A cross validation study was recommended.

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CHAPTER I

PURPOSE OF THE STUDY

The Motivation Analysis Test (MAT) was devised by R.B. Cattell, J.L. Horn, A.B. Sweney, and J.A. Radcliffe by means of comprehensive and objective factor analytic research. The test, according to the authors, could be used in education, psychological clinics, and in industry.

Psychological tests used in a clinical setting are primarily used for diagnostic and prognostic purposes. In other words, the tests are intended to measure, among other things, the distinctive abnormal behavior of different clinical groups, such as depressive patients, chronic schizophrenics, or patients with alcohol addiction. These tests also attempt to measure the change, modification, or progress of behavior as a result of therapeutic treatment.

The purpose of this study was to determine if the MAT would differentiate between the distinctive features of the major clinical groups and measure change due to treatment. Consequently, the results of the study might reflect the value of the MAT in the field of clinical practise and determine the concurrent validity of the test. It is important to note, therefore, that the goal of the study was not to measure the effectiveness of psychotherapy. In other words, the study was not designed to demonstrate the effects of short term therapy, long term therapy, chemotherapy, electro-convulsive therapy, or various psychotherapeutic methods. The study merely intended to determine whether the MAT would reflect patients' changes observed during the therapeutic process.

Significance of the Study

The MAT was the result of more than fifteen years of research. The only validity reported in the manual by the authors has been concept validity. No comparative study among different clinical groups has been published or reported. It was essential and imperative, therefore, to provide empirical evidence that the MAT showed a useful association with clinical criteria, if the authors' claim that the test could be used in a clinical setting were to be supported. The MAT could not be considered a useful clinical tool if it failed to demonstrate any significant relationship or association with other clinical criteria.

A review of the literature on psychological testing in the area of depression, alcoholism and schizophrenia indicated that the emphasis of psychometric testing had been focused on the psychodiagnosis of depression, alcoholism and schizophrenia. Less emphasis has been placed on the psychodynamics of different clinical groups using objective psychological tests. Therefore, the present study was motivated by the desire to obtain empirical data via the MAT which would provide a better understanding of the dynamics of the three clinical groups.

Information Canada, 1972, published the Mental Health Statistics of 1970 in this country. The first admission and readmission rates per 100,000 per year for the depressive, alcoholic, schizophrenic and total psychiatric patients are displayed in Table 1. The total admissions of depressive, alcoholic, and schizophrenic patients in 1970 were 56,045, while the total psychiatric patient population of 1970 was 100,707. The three clinical groups accounted for more than half of the total mental patient population. Hence, the importance of studying these three clinical groups cannot be overestimated.

TABLE 1

PARTIAL 1970 MENTAL HEALTH STATISTICS
DETAILED DIAGNOSIS BY SEX

Group		1st Admission	Re-admission	Total
Depressives	M	3,956	2,379	6,335
	F	7,543	5,194	12,737
	Total	11,499	7,573	19,072
Alcoholics	M	6,456	8,082	15,538
	F	1,127	1,297	3,424
	Total	7,583	9,379	18,962
Schizophrenics	M	3,064	6,063	9,127
	F	2,719	6,165	8,884
	Total	5,773	12,228	18,962
Total Psychiatric Patients	M	26,906	26,149	52,055
	F	24,621	24,031	48,652
	Total	51,527	50,180	100,707

A Brief Description of the Motivation Analysis Test

The MAT covers the areas of a person's interests, drives and the strength of sentiments which are not measured by the available mental ability and personality tests. When it is combined with a skilful clinical interview, mental ability and personality measurements, the authors claim that the MAT increases the reliability of conclusions regarding the assessment of personality dynamics (Cattell et al., 1964).

The MAT consists of 208 items in four subtests: Uses, Estimates, Paired Words, and Information. Forty-eight items are in each of the subtests for Uses and Paired Words. Fifty-six items are in each of the subtests for Estimates and Information.

The scores for the Information and Paired Words subtests are converted into one score which purports to measure the integrated or conscious component. The integrated component represents organized reality-oriented motivation and is composed of high loadings on the Freudian concepts of ego, superego, and persistence (Cattell, 1957; Cattell and Warburton, 1967). The Estimates and Uses subtest scores are combined into one group which purports to measure the unintegrated or unconscious component. The unintegrated component represents wishful, not yet reality-tested, motivation and is composed of high loadings on the Freudian concepts of id, impulsivity, repressed complexes, and a small negative loading on the superego (Cattell, 1957; Cattell and Warburton, 1967). A single total score of motivation and conflict in each dynamic factor can be obtained from the integrated and unintegrated scores.

The MAT was designed to measure five ergs or basic drives directed toward particular goals, and five sentiments which are described by the authors as an acquired aggregate of attitudes built up by learning and by social experience.

The meanings of the five ergs and five sentiments are given by the authors as follows (Cattell et al., 1964):

Ergs:

1. Mating Erg refers to strength of the normal, heterosexual or mating drive.

2. Assertiveness Erg denotes the strength of the drive to self-assertion, mastery and achievement.

3. Fear or Escape Erg is defined as the level of alertness to external danger. Its goal is security. Its interest lies in the avoidance of illness, accident, loss of financial security, military threats and death.

4. Narcism-comfort Erg signifies the level of drive to sensuous, self-indulgent satisfaction.

5. Pugnacity-sadism Erg is described as the strength of destructive, hostile impulses.

Sentiments:

1. Self-concept Sentiment refers to the level of concern about the self-concept, social repute, and more remote rewards.

2. Superego Sentiment is understood as the strength of the development of conscience.

3. Career Sentiment indicates the degree of development of interests in a career.

4. Sweetheart-spouse Sentiment denotes the strength of attachment to wife (husband) or sweetheart.

5. Home-parental Sentiment is described as the strength of attitudes attaching to the parental home.

Norms. The norms for the 1964 edition were based on 1,847 cases; 1,094 men and 753 women. The mean age was 21.5 years, with a standard deviation of 6.9 years. In the standardization group of 1,947, 866 were undergraduate students, of whom 526 were men and 340 were women. The mean age of this portion of the standardization group was 19.3, with a standard deviation of 3.0. One hundred and fifty-six subjects were Air Force servicemen with mean age of 20.5 years and a standard deviation of 3.5 years, and the remainder was made up of 412 men and 413 women from a variety of industrial positions, nursing, and other skilled and semi-skilled occupations.

Reliability. The manual presents four types of reliability coefficients (Dependability, Alpha, Arbitrary split-half, and Stability) for each of the ten dynamic factors. The Dependability coefficients (short term retest), commonly called retest coefficients or coefficients of stability (Cronbach, 1960), were based on 156 Air Force enlisted men. These coefficients ranged from .51 to .81. Stability coefficients (over a five-week interval) were based on 101 college students. The coefficients of stability ranged from .39 to .69. The coefficients of internal consistency ranged from .33 to .70 by the split-half method, and from .33 to .71 by the Kuder-Richardson 20 method. The groups of the split-half method and of the Kuder-Richardson 20 method (Alpha) were based on 151 college students and 227 adults respectively.

Validity. The manual presents concept validity, and the correlations fall between .52 and .76. Cattell defined concept validity as the correlation of the test with a factor, where the factor is an operationally defined representation of a concept (Cattell and Scheier, 1961).

The MAT is not regarded by Cattell and his associates as a 'finished' instrument but as a tool which requires further research in the fields of education, industry, and in clinical settings.

CHAPTER II

THEORETICAL BASES, RELATED STUDIES, AND HYPOTHESES

Theoretical Bases

The purpose of the present research was to investigate the possible existence of distinctive dynamic strengths among three clinical groups: depressives, alcohol addicts, and chronic schizophrenics. Consequently, this chapter will consist of a summary of the psychodynamic theories of psychopathology that formed the theoretical basis from which the hypotheses of the study were formulated.

Theories of Depression

Psychoanalytic theory of depression.-- Abraham (1911) originated the idea that a distinction can be made between melancholic depression and normal grief. He saw both conditions as responses to a loss. While, however, the normal mourner is concerned about the lost person, the depressed patient is usually unconsciously tormented by his feelings of loss and guilt.

In *Mourning and Melancholia* (1917), Freud accepted Abraham's idea and pointed out that in a mourner the object is lost because of death. In other words, for the bereaved person the loss is conscious, while for the depressed patient the loss is unconscious. The loss weakens the ego because the contest between instinctual urges and counterforces leaves little energy available for initiating new activities. Hence, the depressive patient usually feels tired and apathetic. He lacks the interest and the psychic energy to achieve and to live with zest. This incapacity of the ego could be the source of feelings of inferiority.

The loss also weakens the repression defense mechanism. The partial expression of usually hostile or aggressive impulses, as a result of the partial failure of repression, arouses vague feelings of guilt because the superego, being aware of the unacceptable impulses, attacks the ego. This attack is experienced as guilt. Hence in depression the superego is in command of the personality. As a consequence of feelings of guilt and inferiority, the depressive individual diminishes his self-esteem (Buss, 1968; Mendel, 1970).

In order to restore the loss of self-esteem, the depressive desperately requires narcissistic supplies, namely love, affection, and attention from others. Meanwhile, the depressive individual is not sure he deserves to obtain narcissistic supplies and is ambivalent about his own attempts to restore self-esteem.

The strong need for narcissistic supplies and the dependence on others implies that the depressive patient is fixated at the oral stage of psychosexual development. His main defense mechanism is identification (Arieti, 1959; Buss, 1968; Mendel, 1970).

There is considerable diversity among the views of more recent psychoanalytic writers with respect to the origin of depressive conditions. The views of Klein and Biring are presented here because they provide distinctive positions from the orthodox psychoanalytic writers.

Melanie Klein (1948) proposed that the predisposition to depression is formed in the mother-child relationship during the first year of life, rather than in the early childhood traumatic experience. She maintained that an infant reacts to frustration of love and lack of gratification with anger at the mother. Consequently, he develops destructive and sadistic fantasies toward the mother. The weak ego of the infant arouses feelings of helplessness, sadness, and guilt in the face of these tensions. This is the phase which Klein called depressive position. This depressive position is a normal process in every child's life. It is the inability to solve this position adequately that leads to the depression. Klein claimed that normally an infant experiences these feelings until he becomes fully reassured with enough love by his mother. The infant who has not received sufficient love, is predisposed to the development of depression in later life.

Biring (1953) emphasized a loss of self-esteem as the crucial element in depression and claimed that self-esteem could be decreased by frustration of the need for love and affection as well as by frustration of other aspiration. He agreed with the early psychoanalytic writers that early childhood traumatic experience predisposes an individual to depression in later life, but he argued that the depression originates from tension within the ego itself rather than from conflict between the ego and the superego. Depression is a consequence of awareness of the ego of its helplessness, hopelessness, and powerlessness.

Behavioristic approach to depression -- The work of Lewinsohn (1969) and his associates has been chosen as representative of a behaviorally oriented approach to depression.

Lewinsohn's work is based on the assumption that most depressions are largely the result of a sudden reduction of reinforcements which have helped maintain many of the individual's behaviors. Four major assumptions provided the basis for Lewinsohn's understanding of depression.

1. A low rate of positive reinforcement serves as an eliciting stimulus for various responses which in turn have

operant consequences by setting the stage for some depressive behaviors such as verbal statements of sadness, self-depreciation, guilt, and fatigue.

2. A low rate of positive reinforcement constitutes a sufficient explanation for other parts of the depressive syndrome such as the low rate of activity and verbal behavior.

3. The social environment provides reinforcements in the form of sympathy, interest, and concern which strengthen and maintain depressive behaviors. However, since most people in the depressed person's environment sooner or later will find his behavior aversive, they will avoid him as much as possible. Therefore, the depressive's rate of receiving positive reinforcement is decreased and depression is further accentuated.

4. A number of different environmental events such as loss through death, separation, rejection, misfortune, and organismic states and traits such as lack of social skill or ignorance are thought to be causally related to a state of low positive reinforcement. Social skill, defined as the emission of behaviors which are positively reinforced by others is seen as an area of deficit especially important in the development of depressive behaviors (Lewinsohn et al., 1969).

Cognitive theories of depression.-- Beck (1967) proposed that it is a primary disturbance in thinking that causes the development of the disturbed mood state. The affective response is determined by the way an individual structures his experience. Thus, if an individual's conceptualization of a situation has an unpleasant content he will experience a corresponding unpleasant affective response. According to Beck, each person has a schema or pattern of thought with which he approaches and experiences life. It is the qualities of the structural characteristics of the schema that determine individual responses. People, for example, who develop depressive disorders have schemas concerned with self-deprecation; those who develop anxiety states have schemas concerned with the anticipation of personal harm, and so forth.

The following are among the thinking patterns regarded by Beck as characteristic of depressed patients: low self-regard; ideas of deprivation; self-criticism and self-blame; exaggerated ideas of duty and responsibilities; frequent self-commands and injunctions; and desires to escape and suicidal wishes. Pervading all of these is a distortion of reality and a systematic bias by individuals against themselves.

The following are the thought processes regarded to be crucial in the development of this cognitive state:

1. Arbitrary inference, which is a tendency to draw a conclusion from a situation that is essentially neutral or impersonal.

2. Selective abstraction--a concentration on one aspect of a situation that is taken out of context and exaggerated. This occurs when an individual, corrected for one minor aspect of his work, immediately jumps to the conclusion that everything he does is inadequate.

3. Overgeneralization, which involves an overall conclusion based on a single, often minor, experience or incident.

4. Magnification and minimization, which refer to errors in evaluation so gross as to constitute distortions. Here the individual exaggerates his difficulties and minimizes his achievements and capacities.

5. Inexact labelling, the process of perceiving an experience in an exaggerated fashion with a resulting direct association between the affective responses and the label instead of between the actual response and the actual experience.

These and other observations gave Beck the contention that it would be appropriate to consider depression as a "primary disorder of thought with a resultant disturbance of affect and behavior in consonance with the cognitive distortion," rather than a primary mood disturbance.

Existential theories of depression.-- Depressive state, according to Le Mappian, Henry Ey and other existentialists is seen as an insufficiency of all the vital activities. Ey considers depression as "a pathetic immobility, a suspension of existence, a syncope of time." Consequently, the depressive patient experiences a sense of incompleteness, of impotence and of unreality (Arieti, 1959).

Many existentialists focus their attention on the depressed patient's attitude toward time. The depressive patients emphasize the past and ignore the future. Painful memory torments their thinking and reminds them of their unworthiness, guilt and inability to accomplish (Arieti, 1959; Beck, 1967).

Hubert Tellenbach analyzed 140 case histories of depressed patients. His view, according to Beck (1967), in many respects is representative of existential thinking. In his analysis, Tellenbach claimed that depressives have a relatively uniform premorbid personality structure. Orderliness in dealing with things, conscientiousness in their work, and an overpowering need to do right to those close to them are the characteristics of the depressives' life style. Meanwhile, the depressives have great sensitivity to guilt. They devote their life to fulfilling their sense of order and to avoiding situations of guilt. On the one hand, depressives are very sensitive to guilt, and on the other hand, they have a very definite perception of their obligations. Due to this precariously balanced way of living, any accidental situation may throw them off balance to the point of being behind in their obligations or to the point of being behind in their sense of fulfillment. In a psychotic depression, the distance between being and aspiration becomes too great to bridge.

Theories of Alcohol Addiction

Psychoanalytic view.-- Orthodox psychoanalytic theory stresses orality and homosexuality in the etiology of alcohol addiction (Fenichel, 1945). Alcoholics are narcissistic persons who are fixated at the oral stage of development, and most male alcoholics have homosexual tendencies. The unconscious homosexual impulses are developed from the fact that a boy turns from the frustrating mother to the more easygoing father.

The modern versions of psychoanalytic theory are broader. A common link among the majority of the psychoanalytic theories regarding alcohol addiction is summarized by Zwerting and Rosenbaum (1959). In essence, the alcoholic is seen as possessing a predisposition towards addiction due to early security-threatening experiences of deprivation. This deprivation leads to tension, depression and a sense of aloneness and frustration which provokes hostile reactions and, consequently, guilty feelings. In order to cope with such forbidden impulses and conscience mechanisms, the alcoholic demands excessive affection. This excessive need for affection is destined to be frustrated again. Hence, the vicious circle is established. Alcohol dispels the frustration or tension, provides means to express hostile feelings, minimizes or desensitizes the conscience mechanism and supplies the symbolic gratification of the need for affection.

Levy, in his article "The Psychodynamic Functions of Alcohol" (1958), listed seven functions of alcohol:

A discharge function. Alcohol weakens the effectiveness of repression; consequently, unconscious material can be released. Alcohol blunts the force of anxiety, guilt, and shame; therefore previously repressed material can be expressed in carthartic fashion.

A narcotizing function. Alcohol inhibits perception and leads to unconsciousness. It impedes any anxiety-loaded internal or external stimuli from reaching the conscious ego.

An orally gratifying function. Levy does not insist on the importance of oral ingestion in alcoholism as orthodox psychoanalysts claim. The important issue, according to Levy, is a recreation of infantile modes of experience and a passive gratification. The alcoholic passively takes in the pleasures of the world. Alcohol diminishes the pressure of reality testing, and the individual can experience infantile feelings of being forgiven, omnipotent, and lovable.

A masochistic function. The major determinant of alcohol addiction appears to be the fulfillment of masochistic needs. The cumulative effects of alcohol supply such needs: the immediate discomfort of a hangover, the lost jobs, the careers ruined or the marriage broken. There is also the actual possibility of drinking oneself to death.

A hostile function. Drinking allows the release of repressed aggressive urges. Hostility may also be expressed indirectly. The cumulative effects of alcohol such as loss of job, breakup of the family, et cetera, serve to punish those closest to the alcoholic.

A homosexual function. Levy differs from the position of orthodox psychoanalytic theory that homosexuality is a basic to alcoholism. He proposes that such urges are merely easier to express under the influence of alcohol. According to Levy, there is no special relationship between alcohol and homosexuality.

An identification function. Frequently the father of an alcoholic is also an alcoholic. Hence, the son's drinking offers a means of identifying with his father. One concept of "being a man" includes being rough, tough, and a heavy drinker. Drinking, therefore, helps the alcoholic's shaky masculine identification. In the extreme case of alcohol addiction, all identity, interest and energy center around the drinking. Drinking provides a meaning to an otherwise meaningless and empty life. The alcoholic finally reaches the answer to his problems: "Who am I?" "I am an alcoholic."

Learning theory.-- A fear drive-reduction model was selected as the representative of learning theory, a model that attempts to explain the etiology and pathogenesis of alcohol addiction in terms of the principles of learning and conditioning (Conger, 1956).

Several experimental studies based on the drive-reduction model have been carried out. In animal studies, Masserman and Yum (1946) observed that alcohol disintegrated "experimental neurosis," such as pervasive inhibitions of normal goal-response, hypersensitivities and aversions to stimuli associated with the conflictual field. A great number of animals who repeatedly experienced such relief from neurotic tension showed a definite preference for alcohol.

Conger (1951) demonstrated in an experiment that alcohol-injected rats resolved a simple approach-avoidance conflict while control animals continued to hesitate in approaching the feeding box where they had received electric shocks. He also established that the main effect of alcohol on the conflict was produced by a diminution in the avoidance response motivated by fear rather than by a heightening of the approach response. Conger showed, finally, that animals trained to approach under alcohol and avoid when sober learned the discrimination more readily than those trained to approach when sober and avoid under alcohol. Conger concluded that inebriation itself was at least partially responsible for the two results mentioned above.

Conger (1956) suggested that alcohol can produce a reduction in the fear drive. The consumption of alcohol, which decreases the strength of the fear drive, is therefore reinforced. If conflict per se is tension-producing, resolution of conflict by means of alcohol could itself serve as yet another source of reinforcement. Conger applied the learning principle of the gradient of reinforcement to explain why, in human drinking, the negative effects of drinking such as discomfort of a hangover, loss of job, breakup of family etc. did not decrease the drinking.

According to the gradient of reinforcement, responses reinforced immediately acquire greater strength than responses reinforced after a long interval. Drinking is immediately reinforced by the reduction of the fear drive. Negative effects occur so much later than the response that they have little influence on the response.

Kingham in his article "Alcoholism and the Reinforcement Theory of Learning" (1958), presents a more complete theory. He postulates three assumptions: First, alcoholics have a strong conscious or unconscious desire to escape reality, and a cycloid personality pattern. The first part of this assumption is supported by the clinical belief that drinking is an attempt to escape from conflict, anxiety or unpleasant life situations. The cycloid personality patterns of the alcoholics are suggested by psychological tests such as the Minnesota Multiphasic Personality Inventory, the Humm-Wadsworth Temperament Scale and other tests. The second assumption is that the blitz drinking pattern is the dominant response in the drinking hierarchy. The blitz drinking pattern is defined as uncontrollable drinking to the point of extreme intoxication. Thirdly, the learning model of drive-cue-response-reinforcement applies to drinking. The drive is the psychological disturbance of homeostatic conditions such as frustration, fear, anger, loneliness, depression or rejection. The cue is an alcoholic beverage. The response is a blitz drinking pattern. The reinforcement is a return to homeostasis, or a decrease in the tension state.

The learning principles of stimulus generalization and gradient of reinforcement explain the strength of the drinking pattern. The alcoholic who has successfully reduced his feelings of loneliness or frustration to near intoxication may turn to alcohol when he is feeling depressed or rejected. The blitz drinking pattern is gradually generalized to all stimuli reflecting discomfort or psychological disequilibrium. The gradient of reinforcement means that the response nearest the goal or the reinforcement are strengthened the most, while those distant from the goal will be strengthened less and less. Drinking produces immediate reduction of psychological disequilibrium. This immediate reinforcement leads to a strong drinking habit.

Cultural theories.-- The cultural approach emphasizes adoption of the prevailing pattern as a major factor in alcoholism. In certain countries children are introduced to alcohol early in their lives, and they can move toward excessive consumption merely by imitating older siblings, parents, and other models. In other countries the available models tend to be abstinent or at least moderate in their drinking. For example, alcoholism is a minor problem among Jews but a major one among Irish and Chileans (Jellinek, 1960; Buss, 1968; Ullman and Krasner, 1969).

A study by McCord et al. (1959) bolsters the cultural approach. They followed up boys who were studied in childhood and then later in adulthood. They sought early differences between those who subsequently became alcoholics and those who did not. There was no support for any of the biological approaches--heredity, nutrition, or glandular functioning. There was no support for a dynamic approach, for those who later became alcoholics were neither more "oral" nor more homosexual than those who did not. However, the cultural approach did receive support. Alcoholism was found to be related to social class (a higher rate among middle class than lower class) and ethnic background (a higher rate among Irish and native Americans).

Theories of Schizophrenia

Freudian explanation.-- The classical psychoanalytic explanation of schizophrenia emphasized the nature and the depth of regression. In schizophrenia, regression goes back to an early narcissistic level. At this stage, the child gets enjoyment from sucking and he does not distinguish between self and environment, so that neither love nor ambivalence can exist. The child is in a state of primary narcissism. The schizophrenic, like the child, is in a stage before the ego and the superego become differentiated from the id. Therefore, the schizophrenic cannot test reality adequately and he solves his conflict by means of an almost complete denial of reality (Arieti, 1959; Buss, 1968; Fish, 1962; Wolman, 1965).

In the opinion of the psychoanalytic school, there are two immediate causes of the break with reality: an increase in id demands, especially of infantile sexual impulses, and an increase in anxiety revolving around forbidden impulses.

Schizophrenia begins with regression to narcissism. There is a loss of object relation, or loss of contact with reality, as well as a breakdown of the ego. When this occurs, the schizophrenic attempts to regain his object relations. Consequently, both regressive and restitutional symptoms are found in schizophrenia. Regressive symptoms are feelings of depersonalization, grandiosity, passivity and archaic thinking.

Feelings of depersonalization. When the ego is developing during infancy, there is growing awareness in the child of his own body. When the schizophrenic regresses to primary narcissism, he retreats from the external world to a state of extreme awareness of his body. Since the schizophrenic's reality testing mechanism is no longer functioning, he may develop bizarre ideas about his body, and feelings of depersonalization. The schizophrenic is aware of a change in himself but does not know precisely what.

Grandiosity. The schizophrenic's ego abandons the reality testing function. He simply denies the frustrating world which can hurt him and regresses to the stage of ~~in~~infantile omnipotence. Hence grandiosity symptoms can be expected.

Passivity. In the earliest stage of life, the child is passive and orally receptive. When the schizophrenic regresses to that stage, he gives up interaction with the frustrating world and harsh reality and maintains a vegetative existence.

Archaic thinking. As the ego sinks into the id in schizophrenia, primary process thinking overtakes secondary process thinking. As primary process thinking concerns itself with what is desirable, or with wish fulfillment regardless of reality, the schizophrenic retreats from thinking with words to thinking pictorially or symbolically.

Since the schizophrenic is no longer able to carry out the function of reality testing, after having surrendered reality, he attempts to restore object relations. These attempts are manifest in restitutional symptoms.

In bizarre language, the schizophrenic tries to attain reality with words and is stopped from proceeding to the external reality represented by the words. Usually he is only able to recapture symbols of external reality. His speech, therefore, appears to be bizarre.

In schizophrenia, perceptions of the external world are partially or entirely cut off. Hallucination is an attempt to restore these lost perceptions by creating a new "reality."

Delusions are also seen as attempts to restore object relations. In religious delusion, the schizophrenic is building his world up again and attributes meaning to the world which he loses. In paranoid delusion, the patient is not able to accept his homosexual impulses. This conflict initiates the paranoid delusion by means of the projection mechanism (Buss, 1968; Fish, 1962).

Interpersonal theory.-- Many clinicians have identified specific features of family dynamics as the possible causes of schizophrenia. Three groups of investigators who have had a major influence on current theories relating family process and schizophrenia are those led by Bateson, Lidz, and Wynne.

One of the outstanding theories of the family as the source of schizophrenia is the double-bind hypothesis of the Bateson group (1956). In the double-bind situation, the child has no responses available that allow him to succeed; he therefore must lose. He can neither comment upon nor indicate the contradictory nature of the communication. He is the constant recipient of incongruent messages that require him to deny important aspects of his self and his experience.

Bateson's basic assumption concerning the development of schizophrenia is that the mother places the child in a double-bind situation. The child is tied to the mother by a need for nurturance and love. The mother stimulates affection but rejects the child whenever he approaches her. The child is confronted with the opposing messages of love and hostility. He is punished if he expresses love and affection, and punished if he does not, and his escape routes are cut off. Mother thereby provides a model of irrationality for the child to imitate. The child takes refuge in denial, fantasy and irrationality; in doing so he starts down the road to schizophrenia.

Lidz and his colleagues (1958), while accepting the double-bind approach, have a different way of handling the development of schizophrenic thinking and speech. They observe that the parents of schizophrenics maintain their own adjustment by limiting the environment and by rigidly preconceiving reality. The child must imitate his parents and accept the parental evaluation of reality. The real world must be denied and the child's reality distorted. The child is caught between the environment as it exists and parental interpretations of it. In other words, the child must accept mutually contradictory experiences, and this acceptance inevitably leads to distorted thinking.

Two deviant types of marital relationships in the family backgrounds of schizophrenic patients were found--"schism" and "skew" (Lidz et al., 1957). In a marital schism the schizophrenic parents are in a state of chronic disequilibrium and discord. The relationship is characterized by chronic hostility and mutual withdrawal, recurrent threats of separation, derogation of one parent by the other, competition for the children's loyalty and affection and absence of any positive satisfaction from the marital relationship.

The child may react to the parental schism in one of four ways. He may fill the role of scapegoat. He may insert himself into the split, seeking to widen the gap and gain one parent for himself. He may devote attention to bridging the gap between the parents, and consequently give up his own independence completely. He may be caught in a bind in which loyalty to one parent means rejection by the other.

In a marital schism, the child probably cannot model himself after one parent because to do so would antagonize the other parent. This leads to faulty identification. He will also develop conflicting interpretations of reality because the interpretations suggested by one parent will be negated by those of the other. He may also fail to develop the proper sex roles as a man or a woman. The parent of the opposite sex typically uses the child as a replacement in order to fill his own emotional needs and this interferes with the child's development as an independent person.

In a marital skew, the pathology of one parent usually mother, dominates the home. The dependent spouse supports the pathology of the dominant partner and forces the family to go along with a deviant interpretation of reality and the deviant model presented by the dominant parent. Thus, the child gets a distorted view of reality.

Wynne and his co-workers assume that the family system must be a learning environment that permits both appropriate identification and reality testing. The Wynne group sees schizophrenia as the result of an individual's failure to develop a clear and stable ego identity. According to this group, the following are the main features differentiating the families of young schizophrenics from other families:

1. Patterns of handling attention and meaning in the family are fragmented, blurred, poorly integrated and disjunctive. Therefore, it interferes with and impairs the child's capacity to focus attention and to think sequentially and adaptively.

2. The schizophrenic family patterns seem to be characterized by erratic and inappropriate kinds of distance and closeness. These modes for handling meaning and the styles of relating seem to serve as defenses against underlying feelings of pervasive meaninglessness and emptiness. These shifts in affect and style of relating make for confused expectation in the child and provide odd and fragmented models for identification.

3. Finally, the overall structure of the schizophrenic family is characterized by pseudo-mutuality and pseudo-hostility. In pseudo-mutuality, family members fit together and interrelate according to assigned formal and conforming roles and at the expense of their individual identity and separateness. In pseudo-hostility, family members are in a state of chronic conflict and alienation, but this difference is seen as unimportant and superficial. Pseudo-mutuality and pseudo-hostility are viewed as collective defenses, permitting family members to maintain some semblance of a life together without having to confront

directly the pervasive meaninglessness of their as well as their underlying fears of separation, hostility, tenderness or intimacy.

These distorted modes of thinking and patterns of rigid role performance are inadequate and inappropriate, but the individual could function adequately within his family until adolescence. The crisis derives from the social requirement and the individual inner drive that the individual has to move out of the rigid family structure and behave as an independent and flexible person. This is an insoluble problem for the child, since he can no longer meet adequately the new demands. The schizophrenic reaction is his solution. An acute schizophrenia occurs in the context of an identity crisis (Mishler and Waxler, 1965).

Bateson's use of the double-bind in its specific application to schizophrenia is dyadic in emphasis. One consequence is that the family tends to be viewed as consisting of a set of dyadic relationships. In Lidz, the stress is also on the dyad; however, it is a dyadic relationship that has an effect on a third person (the developing child). Finally, Wynne's conception includes the whole family as the unit for analysis and theory without concern for any specific role-player.

Cognitive theory.-- The cognitive approach to schizophrenia focuses on the process of cognition. The cognition may come from the senses, or it may consist of associations, thoughts, ideas, or memories.

Cognitive theorists believe that the fundamental defect in schizophrenia is an inability to select, attend to, and regulate the stimuli that impinge on the organism. This breakdown in information processing is assumed to underlie all the other symptoms: bizarre language, feelings of change and depersonalization, difficulty in reality-testing, and inefficiency in performance (Buss and Buss, 1969).

One proponent of this theory, David Shakow (1962), regards the organism as a system that processes information. The individual selects and responds only to relevant aspects of his environment and ignores extraneous, irrelevant aspects. "The schizophrenic. . .has difficulty in focusing on the relevant aspect of the defined situation, while being more susceptible to the influence of the peripheral. He does not habituate readily. . ." (Shakow, 1962, p. 10).

When the attentional process breaks down, according to McGhie and Chapman (1961), there is a failure to select from incoming stimuli. A chaotic mass of sensory messages bombards the individual, who cannot sort them or impose order on them. Perception is now passive, marked by a flood of unconnected sensory impressions as well as internal, mediated thoughts and associations.

> The patient finds difficulty in ordering, not only his movements, but also his thoughts. Like his movements the patient's thoughts are non-volitional, uncoordinated, and subject to sudden stops. The disturbance of thinking again reflects the fundamental loss of the normal mechanism of selective-inhibitory control of attention (McGhie and Chapman, 1961, p. 112).

The schizophrenic simply does not possess the cognitive ability required to process information efficiently. This defect affects the entire range of cognitive behavior, from simple to complex: perception, association, and conceptual thinking.

Learning theory.-- Schizophrenic behavior is interpreted by Mednick (1958) in terms of learning theory. He based the following theoretical assumptions on the results of experimental studies of the conditioning, generalization, and learning of schizophrenics:

1. Schizophrenics show faster conditioning than normals. Several research studies support this assumption. Pfaffman and Schlosberg (1936) conditioned the knee-jerk response in twenty-five schizophrenics and twenty-five normals. The schizophrenics conditioned faster. A study by Taylor and Spence (1954) indicated that schizophrenics show faster eye blink conditioning than normals or anxious neurotics.

2. Schizophrenics learn slower than normals in complex

situations. In complex situations, high anxiety enhances irrelevant and incorrect responses, causing a decrease in learning. Schizophrenics, having greater anxiety, should learn slower in complex situations. Mednick (1958) compared the learning of schizophrenics and normals on a minimum and maximum complexity list. Schizophrenics learned the low complexity list more quickly than the normals, while the normals learned the high complexity list more quickly.

3. Schizophrenics show elevated generalization responsitivity. When a response, having been trained to a stimulus, is also elicited by similar stimuli, stimulus generalization has occurred. Mednick cites several experiments that found elevated generalization gradients in schizophrenics. Bender and Schilder (1930), studying conditioned withdrawal from shock, noted extreme over-generalization from their schizophrenics. Garmezy (1952), studying generalization along the dimension of pitch, found schizophrenics showing more generalization than normals. This effect was especially marked under the condition of stress. Mednick (1955), using the dimension of space, found that schizophrenics, especially acute patients, generalized more than normals.

According to Mednick (1958), the preschizophrenic individual is intensely anxious. A high level of anxiety means a high level of drive. The higher the drive is, the greater the amount of stimulus generalization. The excessive generalization leads to more stimuli becoming linked to anxiety and therefore capable of invoking fear. As more fear-arousing stimuli are added to the list, the level of anxiety increases. As a result, the individual attempts to avoid these stimuli. One way of escaping is to think of remote, irrelevant thoughts and associations. These remote associations distract the schizophrenic from anxiety-provoking thoughts, and his anxiety level is reduced. This reduction in anxiety is rewarding and the tendency to think irrelevant and distant thoughts becomes habitual.

Mednick recognized that chronic schizophrenics tend not to show overt evidence of intense anxiety. Therefore, he proposed a transition from acute to chronic schizophrenia. The excessive generalization of the high drive (anxiety) state may lead to a highly generalized, remote, irrelevant association. A remote asscciation diverts the individual's attention from anxiety-provoking stimuli and the resulting anxiety reduction is reinforcing. Thinking irrelevant thoughts proves to be so effective in reducing anxiety that schizophrenics may appear emotionally phlegmatic. Now the well-learned tendency toward remote and tangential association is maintained even in the absence of a high anxiety level.

Existentialist explanation.-- Existentialist psychology explains schizophrenia as a "hypotonia of consciousness." In other words, schizophrenia is similar to a process of falling asleep in which the consciousness drops to a lower level. The schizophrenic's ego is influenced with respect to consciousness and responsibility. He experiences himself as so restricted in his complete humanity that he is not able to feel himself as really existent (Frankl, 1955; Wolman, 1965).

One of the primary symptoms of schizophrenia is the experience of pure objectiveness. The schizophrenic experiences that he is transformed into an object. He experiences that his psychic act is transformed into a passive mood. Normal people experience themselves talking, watching, listening, laughing, etc., while the schizophrenic experiences himself as being talked, being watched, etc. The existentialist calls this phenomenon "experiential passivizing of the psychic functions."

Related Studies

The Motivation Analysis Test

Research to date has not provided ample data relevant to testing different clinical groups with the MAT. Sweney's studies of the MAT with different clinical diagnostic groups have been mentioned by a number of writers. Unfortunately, it was not possible to obtain copies of Sweney's research, since he did not reply to the present investigator's request for information.

Cattell (1964) mentioned that discrepancy between the integrated and unintegrated scores in clinical groups was significantly greater than in the normative population in a study reported by Sweney. In other words, the clinical group obtained a higher Total Conflict score than the normative population.

A similar result was obtained in Kunzman's study (1966). He tested thirty-four physically disabled patients and found that the disabled subjects scored significantly higher on the Total Conflict score than did the norm group. The conflict score for the disable group also differed significantly from the norm on five factors: Career Sentiment, Self-concept Sentiment, Home-parental Sentiment, Superego Sentiment, and Mating erg. In the same study, Motivation scores of the disabled patients were significantly lower than the norm group on the following three factors: Self-concept Sentiment, Mating Erg, and Assertiveness Erg.

Criminals who committed violent offenses, according to Coffelt (1965), scored lower on Mating Erg than criminals who committed non-violent offenses. The latter group retained much of the normal strength of Mating Erg. Coffelt's study reported further that the criminal group expressed a greater degree of Pugnacity-sadism Erg than did the normative population. In addition, the criminal group repressed the Fear Erg and Superego Sentiment.

Delhees (1968) cited an investigation by Sweney (1967) of a group of 126 juvenile delinquents. It was found that the juvenile delinquent group scored significantly higher than the normative population in Total Conflict score. Conflict scores on Superego Sentiment and Self-concept Sentiment were higher than the norm.

Sweney and May (1965) jointly studied a group of thirty schizophrenics and found that the schizophrenics scored higher on Total Conflict, Self-concept Sentiment and Superego Sentiment than the normative population.

One study on the MAT pre- and post-treatment results was carried out by May (1964). He claimed that significant improvement was found in the Self-concept Sentiment score under general and electro-shock treatment. The nature of the general treatment was not described by Cattell in reporting May's study.

Psychological Testing of Depression

Psychological tests are used for the clinical identification of depression and for the measurement of its severity. The Beck Depression Inventory and the Hamilton Rating Scale in addition to the Minnesota Multiphasic Personality Inventory will be reviewed. The former two instruments were used in the present study.

Beck Depression Inventory.-- The Beck Depression Inventory (BDI) consists of twenty-one response sets. Each response set describes a specific behavioral manifestation of depression, and consists of four or five statements. Numerical values from 0 to 3 are assigned to each statement to indicate the degree of severity of the symptom, from neutral to maximum severity (None, Mild, Moderate, Severe). In the ten categories, two alternative statements are presented at a given level and are assigned the same weight. The total score of depression represents a combination of the number of symptom categories and the intensity of the particular symptoms.

The norm group of the distribution of means and standard deviations of BDI scores according to depth of depression consisted of 409 patients in which the proportion of females (60.9 per cent) was larger than that of males (39.1 per cent), the percentage of white patients (64.7 per cent) was higher than that of negro patients (35.3 per cent), and the age range concentrated between fifteen and forty-four (80.2 per cent) (Beck, 1967).

The concurrent validity of the BDI has been supported by a number of studies employing clinical ratings and/or other psychometric measures. BDI correlations with psychiatric ratings in four separate studies were .65, .67 (Beck et al., 1961), .61 (Metcalfe and Goldman, 1965), and .67 (Nussbaum et al., 1963). In the latter study, the BDI scores showed a significant correlation (.75) with the MMPI D-scale. A Spearman Rank Correlation Coefficient of .75 between the BDI and the Hamilton Rating Scale was reported by Schwab, Bialow, and Holzer (1967).

According to Beck, construct validity of the BDI has been demonstrated. He and other researchers found a significant relationship between BDI scores and "masochistic" dreams (Beck and Ward, 1961), the score on a self-concept test (Beck, 1961), and childhood bereavement (Beck, Sethi and Tuthill, 1963). A significant correlation between BDI scores and sense of humor test scores was found as another evidence of construct validity (Nussbaum and Michaux, 1963). Another index of the construct validity of the BDI was provided by Schwab et al., (1967) in their study of the BDI with medical in-patients. A significant decrease in the BDI score following treatment with imipramine was found. The change in BDI scores paralleled the psychiatric evaluation.

Reliability of the BDI was reported by two methods. First, the score for each of the twenty-one categories showed a significant relationship to the total score on the BDI in a sample of 200 cases, according to Beck (1967). Second, using the split-half method, a Pearson r of .86 and a Spearman-Brown correlation of .93 were found in a sample of 97 cases.

The test-retest method is not appropriate for appraisal of a personality test in general (Sundberg and Tyler, 1962), and for appraisal of the BDI in particular (Beck, 1967). In the case of the BDI, the correlation between the results could be raised significantly because of the memory factor if the inventory were readministered after a short period of time. On the other hand, if the interval between administrations of the test were long, the correlation would be lowered because of changes in the intensity of depression occurring in psychiatric patients. However, an indirect method of estimating the reliability of the BDI was reported. The BDI was administered twice to a group of thirty-eight patients with a clinical estimate of the depth of depression being made each time. The interval between the two tests varied from two to six weeks. The result was that changes in the BDI scores corresponded to changes in the clinical ratings of the depth of depression (Beck, 1967).

Hamilton Rating Scale.-- The Hamilton Rating Scale for depression (HRS) was devised by Max Hamilton (1960) and was developed with patients already diagnosed as suffering from depressive state. The scale consists of a seventeen-item list of symptoms (see Appendix I) which is scored by a clinician on the basis of an interview. Symptoms are rated by a five-point scale (0-4) where numbers are equivalent to Absent, Trivial, Mild, Moderate, and Severe, or by a three-point scale (0-2) where numbers are equivalent to Absent, Doubtful, and Obvious. The latter scoring system is used when quantification of the variable is very difficult.

The interrater reliability of the HRS ranged from .84 to .90, as reported by the author. No information about validity was provided. Factor analytic studies were done by Hamilton based on a sample of forty-nine patients in 1960 and of 272 patients in 1967 in which four factors were obtained.

In the present study, the researcher was the only rater. The score obtained by the sum of the ratings was doubled as suggested by Hamilton. Two changes with respect to the HRS were made. One was the item number nine Agitation symptom, which was rated by a five-point scale instead of a three-point scale as suggested by Hamilton (1967). The other was item number eleven (Somatic Anxiety symptom), which was rated by a three-point scale on the grounds that quantification of the symptom was not given by the author and it was very difficult for the researcher to make the necessary discrimination.

Quantification of items number two, three, and fifteen were not specified in the 1960 article, but were given in Hamilton's 1967 publication.

Since publication of the HRS, several research studies on the use of the scale have been published. The HRS was used either as a tool for diagnosis or as an instrument for evaluation of treatment.

A positive significant correlation ($r=.49$, $p<.001$) between the Maudsley Personality Inventory Neuroticism score and the HRS was found. Both scores were obtained at the same interview (Garside et al., 1970).

Schwab et al., (1967) reported that the Beck Depression Inventory and the HRS were used to assess depressed patients in addition to clinicians' diagnoses. The Beck Depression Inventory correlated highly with the HRS (.75). The diagnosis of depression based on the results of the Beck Depression Inventory and the HRS was supported by the clinical observations of medical personnel.

The HRS was used in a study of endogenous features of depression in women (Rosenthal and Klerman, 1966). Positive correlations significant at the .01 level were found among the authors' factor score, the Hamilton's factor score and Kiloch's factor score. In an investigation of endogenous and reactive depression (Sandifer, Wilson and Green, 1966), the HRS was used to measure the severity of depression. A .68 correlation, significant at the .001 level, was obtained between the HRS and the Category Scale score devised by the authors. In a similar study (Tonks, Paykel, and Klerman, 1970), the HRS was incorporated as one of the variables of the patient's Total Recent Life Events which, in turn, was one of many other variables such as age, length of illness, and so on. Unfortunately the results of the HRS were not reported in the investigation of clinical depression among Negroes.

In assessing the effect of Amitriptyline as a treatment for depression, the Hamilton Rating Scale was used as an instrument either combined with an overall clinical assessment and an occupational therapy rating scale (Burt et al., 1962), or combined with an independent assessment of the senior nursing staff (Hordern et al., 1963), or used by two physicians at a joint interview but rating independently

(Hordern et al., 1964). All rating results as reported in the three studies mentioned above were statistically significantly different after a period of medication.

Robin and Harris (1962) found that the HRS was an efficient tool to assess the effectiveness of electroplexy and Imprimine on depressed patients. They found that electroplexy produced a greater degree of improvement and more rapid response than Imipramine.

Minnesota Multiphasic Personality Inventory.-- The Minnesota Multiphasic Personality Inventory (MMPI) is a test widely used in clinical settings. The D scale (Scale 2) on the MMPI measures the depth of depression. Clinical experience has indicated that high scores are rarely inadvertent; the patient should be considered clinically severely depressed even though he may appear comfortable and smiling while being interviewed (Dahlstrom and Welsh, 1960). However, high scores on the D scale do not necessarily indicate a primary diagnosis of depression. Patients with other diagnoses such as schizophrenia may also be depressed and have high D scale scores.

Several studies have reported the similar main profile of depressive patients. The peak score is on Scale 2. Scale 7 (Psychasthenia) is either the second highest score or tied for second. Depressive patients' scores tend to be lowest on

Scale 9 (Hypomania). Among the neurotic scales, Scale 2 exceeds Scale 1 (Hypochondriasis) and Scale 3 (Hysteria) by at least ten points (Leverenz, 1943; Guthrie, 1950; Rosen, 1958).

Modlin (1947) reported the peak score in 88 per cent of his sample of depressive patients was on Scale 2, the remaining cases having peak scores on either Scale 3 or Scale 8 (Schizophrenia). In 97 per cent of his cases, Scale 2 was among the highest scales in the profile, while no profile from this group was classified as normal. Unfortunately, the author did not report the composite profile for his sample of thirty-one depressive patients.

Scale 2 of the MMPI consists of heterogenous factors. Harris and Lingoes (1955) identified five subscales: subjective depression, psychomotor retardation, psychical malfunctioning, mental dullness, and brooding. O'Conner, Stefic, and Gresock (1957) discovered five subscales which they labeled hypochondriasis, cycloid tendency, hostility, inferiority, and depression.

Dempsey (1964) constructed a depression scale composed of thirty of the original sixty items of the MMPI D scale, and recommended that it be used instead of the original. The revised scale, called the D-30 scale, expressed the dimensional differences of the original and eliminated error variation. It consisted of items that differentiate systematically not only between hospitalized and normal samples, but also within hospitalized samples and within normal samples. The T score norms for the D-30 scale are based on the performance of 280 normals and 144 hospital patients.

Psychometric Tests of Alcoholism

Alcoholism Scale.-- Manson (1949) was probably the first investigator to construct an alcoholism scale. He found that 72 items out of his original 470 personality questionnaire items which differentiated the alcoholic group (88 males and 42 females) from the control group (71 males and 81 females). A critical score of 21 made 79 per cent correct predictions for the male group. With the use of a critical score of 26, it was possible to make 80 per cent correct predictions for the female group. The test was known as "The Manson Evaluation."

The MMPI and the Personal History Questionnaire (PHQ) were administered by Hampton (1951) to 84 alcoholic subjects and to 84 non-alcoholic controls of comparable age, intelligence and economic and educational levels. After analysis of those items which revealed significant differences between the two groups, 125 items from the MMPI and thirty-one items from the PHQ were selected as a trial

Personality Questionnaire for Drinkers. This new questionnaire, called the Hampton scale, was administered to new samples of 100 alcoholics and 150 non-alcoholics. Significant differences in mean scores were found between the alcoholics and non-alcoholics. The validity of the new test was investigated by the extreme-groups method and the expectancy table technique. The reliability was checked by the split-half method and the test-retest method. Both validity and reliability were found to be acceptable. A tentative cutting score of 59 was adopted, distinguishing alcoholics from non-alcoholics.

In 1956, Button reported that Holmes had made an item analysis of 72 alcoholic MMPI records. Holmes found that 59 items differentiated significantly the alcoholics from the normal subjects of the Minnesota standardization group on each item at critical ratios ranging from 3.0 to 11.4. The scale stood up well upon cross-validation with a subsequent sample of twenty-three alcoholics. It differentiated the alcoholic group from the control group of psychiatric patients well beyond the .001 level of confidence. This empirical scale was called the "Al" scale.

Hoyt and Sedlacek (1958) were able to obtain 68 items from the MMPI as an alcoholism scale. The scale was able to differentiate alcoholics from normals. With a cutting score of 24, 76 per cent of the alcoholics and 80 per cent of the normals were correctly identified. In the same study, the authors suggested also that the three groups (normal, alcoholic, and psychiatric patients) can be differentiated by a combination of the MMPI scales and the special "alcoholic" scale.

The previous MMPI-derived alcoholism scales--the Hampton Scale, the Holmes Scale and the Hoyt and Sedlacek Scale--were incapable of differentiating alcoholics from psychiatric patients, according to MacAndrew and Geertsma's study (1964). Hence, the authors imply that the existing alcoholism scales had been shown to provide indices not of "alcoholism," but of general maladjustment.

MacAndrew (1965) developed a scale from the 566 MMPI items which would differentiate successfully between alcoholic and psychiatric patients. Three hundred alcoholic and 300 psychiatric patients comprised the study group. Each patient group was divided into a standardization group (N=200) and cross-validation group (N=100). Item analyses of MMPI responses by the standardization groups yielded 51 items which were significant at the .01 level. Following the removal of two items which dealt directly with alcohol usage, the final scale contained 49 items. With the use of 24 as a cut-off point, the scale correctly classified 81.5

per cent of the combined cross-validation sample (8.5 per cent of the total sample were false negatives and 10 per cent false positives). The scale was known as the MacAndrew Alcoholsim Scale.

Several cross-validation studies on the alcoholism scales mentioned above have been published. Wishler and Cantor (1966) administered the MacAndrew Alcoholism Scale to 73 alcoholics and 67 non-alcoholics. No appreciable difference was found. However, Rhodes' study (1969) supported the usefulness of the MacAndrew scale as a clinical screening device. Responses on the MacAndrew scale were analyzed. The mean score of the alcoholics was 30.06; of the non-alcoholics, 20.89. The study yielded a highly significant difference between alcoholics and non-alcoholics ($p<.001$).

A comparison of the MacAndrew scale (Amac) with the three older scales--the Holmes scale (Am), the Hampton scale (Al), and the Hoyt and Sedlacek scale (Ah)--was carried out by Rich and Davis (1969). All scales showed significant differences ($p<.01$) between diagnostic groups. However, the Al scale did not differentiate male alcoholics from male psychiatric patients, and the Ah scale did not discriminate between female alcoholics and female psychiatric patients. The analysis indicated that the Amac and Am scales were the most promising of the MMPI alcoholism scales.

Ucker and his co-workers (1969) found that 109 alcoholics obtained a significantly higher score on the Ah and Am scales, but not on the Al scale. Vega (1971) compared the scores of 78 alcoholics, 27 psychiatric patients and 31 normals on the Amac, Am, Al, and Ah scales. The alcoholics' scores differed from those of the two control groups on the all scales except the Ah scale.

The Rosenberg Composite Scale is the most recent alcoholism scale (Rosenberg, 1972), and consists of 27 items taken from the existing three scales: the MacAndrew scale, the Hoyt and Sedlacek scale, and the Holmes scale. Rosenberg's study was based on a sample of 111 alcoholics and 56 psychiatric patients.

Hewitt (1943) was probably the first investigator to study alcoholic MMPI profiles. He found the psychopathic deviate scale the most prominent and consistent trend in alcoholic males. He noted that alcoholic females have consistently greater deviation on the psychopathic deviate and the paranoia scales. He concluded that alcohol addiction in his sample seemed to be associated with deep personality disorders.

In a study by Button (1956), the basic MMPI profile in a sample of 64 alcoholics showed a primary peak at psychopathic deviate and a secondary peak at depression with a general elevation of neurotic scores over psychotic scores. Brown (1950) compared the MMPI profile of neurotic alcoholics with those of non-alcoholic neurotics. The composite profile of psychopathic alcoholics was compared to that of non-alcoholic psychopaths. A striking similarity was found between the profiles of the alcoholics and the nonalcoholic neurotics, as well as between the alcoholic and non-alcoholic psychopaths. Similar results were obtained by Rosen (1960). His alcoholic subjects and his psychiatric patients displayed similar constellations of psychiatric symptoms in the MMPI profiles. It was concluded that alcoholics do not present a unique personality type.

The Rorschach test.-- Klopfer and Kelley (1942), reviewing earlier Rorschach studies, stated that no typical Rorschach pattern for alcoholics had been recognized. The records of chronic alcoholics without the presence of deterioration generally showed neurotic, schizophrenic, depressive, or psychopathic personality trends. When deterioration developed, organic signs made their appearance. Since Klopfer and Kelley's review, several Rorschach studies on alcoholics have been published.

In one of these studies, Billig and Sullivan (1943) divided twenty-nine hospitalized alcoholic patients and eleven persons jailed for alcoholism into groups rated favorable to poor in prognosis. Rorschach tests were administered and indicated that the ambitions of the alcoholics were rather high but the actual achievements were limited (W+:M). Alcoholics also showed sensualization of personality difficulties, but lack of adaptation ($c>F'c$). They withdrew from environment ($FM+m>Fc+c+C$), and were not able to smooth relations between reality and self (absolute decrease of FK). They showed self-centered wish-fulfillment ($FM>M$) and little control of mood swings and desires, lack of attention as well as weak restraint, poor mental poise and stability (absolute decrease of Fc, and $FC<CF+C$).

Billig and Sullivan discriminated cases with favorable, mediocre, and poor chances of recovery by means of quantitative differences in the Rorschach signs. The following signs were used as indications of ability to respond to treatment: $VIII+IX+X/R>30$ per cent, $FM+m>Fc+c+C'$, $M>C$, presence of FK responses, low number of k and K responses.

Halpern (1946) did not present the composite Rorschach protocols of her sample. However, she described the alcoholic as follows:

> He is a maladjusted, immature individual who has developed few techniques for alleviating his

> feelings of discomfort. Actually, his attitude implies that he will not recognize limitations or inadequacies in his personality, will not admit them. . .he deliberately exposes himself to irritating and challenging stimuli instead of insulating himself against them. . . .This refusal to accept his personality problems in a way that would enable him to work with them and build up the more acceptable forms of compensation is one of the most striking characteristics of the alcoholic personality as revealed in the Rorschach Test protocols. . . He is satisfied with the passive role in the majority of instances, and it is important to him to find a passive way of handling his difficulties, a way which will put the problem outside himself and make no active demands on him (pp. 477-478).

In a study of 100 alcoholic patients, Buhler and Lefever (1947) provided a list of 99 Rorschach signs for the discrimination of different clinical groups. They summarized their findings as follows:

> The total alcoholic group has been compared with several contrasting clinical groups by means of the analytical chart. The clinical groups include: a "normal" group, a combined psychoneurotic group, a general psychopathic group, and a non-psychotic organic group. The greatest difference is indicated between the alcoholic group and the normal group. A rather close resemblance is shown between the total alcoholic group and the general psychopathic group, a still closer resemblance between the alcoholic and the non-psychotic organic group. Clinically defined subgroups of alcoholics were also compared with nonalcoholic clinical groups of similar types. Definite similarity was demonstrated between the alcoholic and nonalcoholic psychoneurotic group, as well as between alcoholic psychopaths and social psychopaths.
>
> Mean normality scores computed for the several groups were shown to be remarkably similar for comparable psychiatric diagnoses.

> In comparing the total "clinical mixed" group of alcoholics with other clinical groups, and in comparing psychiatrically defined subgroups, it was found that there is a pattern of signs significant for the alcoholic of every clinical group (Buhler and Lefever, p. 258).

The authors' primary finding was that the presence of high anxiety (k+K+FK) in conjunction with low tension tolerance (low m) distinguish alcoholics from nonalcoholics. Buhler and Lefever set the alcoholics apart from the psychopaths and the psychoneurotics as follows: The alcoholic has a low tension tolerance and a high degree of anxiety; the psychopath has a low tension tolerance and a low degree of anxiety; and the psychoneurotic has a high tension tolerance and a high degree of anxiety.

An attempt was made by Button (1956) to collect 'alcoholic signs' of Rorschach responses from different studies. He postulated that the combination of low and poor M, high W percentage and low D percentage and a high C, with the sum of CF and C higher than the FC value, the tendecies toward a high c column, with the sum of cF and c higher than the Fc value, might have interpretive significance. The author warned that this combination might be noted in clinical groups other than alcoholics, but it probably would not tend to occur in normals.

In Button's study based on 67 alcoholics, this group tended to give more constricted and barren Rorschach records than did normals. They differed significantly in the following scoring categories: M, m, D, FK, F, Fc, C', W percentage, d percentage, and A percentage. The normals exceeded the alcoholics in all categories except the last three. Button's findings agree with those of Buhler and Lefever with respect to two additional 'alcoholic signs' on the Rorschach response: a high k+K+FK percentage and a low m.

An interesting study was conducted by Griffith and Dimmick (1949). They established "water" as a content category and under it the following perceptual variations were subsumed: coastline, ice, fountain, islands, glacier, lake, pond, reflections in water, river, underwater scene, waterfall. Rorschach responses were collected from seventy alcoholics, sixty-four paranoid schizophrenics, seventy neurotics, fifty-seven hospital attendants, and forty narcotic addicts. The data revealed a tendency for water responses to occur more frequently in the records of alcoholics than in those of any other group. The difference between the alcoholics and the other groups was statistically significant.

However, an evaluation of water responses in the Rorschach protocols of alcoholics was made by Shereshevski-Shere and Lasser (1952). Their thirty-three controls produced a significantly larger number of water responses than the thirty-four alcoholic patients. The authors concluded that water responses in the Rorschach cannot be used as a direct indication of alcoholism.

Finally, Ackerman (1971) attempted to cross-validate twenty hypotheses or 'alcoholic signs' reported over the past three decades claiming to differentiate alcoholics from nonalcoholics using the Rorschach. The experimental group consisted of twenty-five alcoholics, while the control group consisted of twenty-five non-psychotic, non-organic, nonalcoholic psychiatric patients and was matched with the experimental group for age, race, sex, income and education. Rorschach scoring was consensually validated and Chi squares were used for all twenty hypotheses. Only two significant differences were found, and both were opposite to what was predicted. Nonalcoholics gave more water responses than alcoholics and significantly more high CF and C scores.

The Wechsler Tests.-- Studies on these intelligence tests have not provided much light on their usefulness for diagnosing alcoholism. Halpern (1946) reported the Wechsler Adult Intelligence Test results of forty-seven alcoholics and found that the I.Q. of the group was 114.9, standard deviation 14.30, range 73-139. The Verbal I.Q. was 114.7, standard deviation 13.55. The performance I.Q. was 111.8, standard deviation 13.8. There was no significant difference of a diagnostic nature between the verbal and performance scores. Buhler and Lefever (1947) reported 100 alcoholics' Wechsler test results as follows: mean I.Q. 103.15, standard deviation 13.92, and range 76-129.

Victor and his associates (1959) studies the mental functioning of alcoholics with the Wernicke-Korsakoff syndrome. The Wechsler-Bellevue Intelligence Scale (WB) and Wechsler Memory Scale (WMS) were administered to fifteen patients with this syndrome. The results indicated that Korsakoff patients do not have a unique profile on the WB. There was no marked tendency to score higher on the verbal or performance tests. However, patients did perform lower on Digit Symbol, Arithmetic and Block Design subtests.

The scores of the Wechsler Memory Scale are so weighted that in the normal population they should be equivalent to the I.Q. within each age group. In the Victor study, the mean differences between I.Q. and M.Q. in the Korsakoff patients were significant beyond the .01 level. Hence, it is worth noting that the cognitive processes tested by the WMS were more severely damaged than the other intellectual abilities. The deficit was most severe in learning new associations. While none of the patients failed entirely with the easy associations, nine of fifteen patients were unable to learn any of the difficult associations. The capacity to form logical memories from stories read to the patients was grossly impaired. A common error made by the patients in reproducing designs from memory was to substitute another design or to perseverate on an earlier design or on part of one. Mental control, as tested by counting backward from 20 to 1, recitation of the alphabet, and serial additions by 3 showed the least impairment.

Psychological Testing of Schizophrenia

The Rorschach and Wechsler Adult Intelligence Scale were chosen as a major focus for the review of psychodiagnosis in schizophrenia because of the great volume of research published on these two tests. A few studies employing the MMPI have also been included.

The Rorschach Test

Rejection of cards. The rejection of cards in Rorschach protocols has been interpreted by Bohm (1958) as schizophrenic blocking. However, research findings indicate that there is no one-to-one relationship between rejection and schizophrenia. Mensh and Matarazzo (1954) and Tamkin (1958) have reported no differences in rejection frequency among different clinical groups. The samples of Mensh and Matarazzo consisted of 100 psychoneurotics, seventy -four psychotics, and twenty-seven organics. The groups of Tamkin were made up of thirty-seven neurotics and fifty-nine psychotics.

The loci of rejections, however, seem to have diagnostic potential. Sisson, Taulbee, and Gaston (1956) reported that 128 schizophrenics rejected cards V, VII, VIII, IX, and X significantly more often than 190 normals. McKeever and Gerstein (1959) found that cards I, II, V, and VIII were significantly less likely to be rejected by 693 patients with various diagnoses. Therefore, rejections of cards I, II, V, and VIII could be indicative of blocking, especially in view of good responsivity on the other cards.

Location choice. Beck (1938) found a statistically significantly greater frequency of Dd responses in the protocols of eighty-one schizophrenics than of sixty-four normals. He concluded that schizophrenics are often sensitive to the usually overlooked details of daily life and are relatively unresponsive to obvious stimuli commonly attended to by normal persons. Knopf (1956) supported Beck's findings. In an analysis of Dd percentages he obtained significantly different median values of 15.0 per cent for 100 schizophrenics and 6.5 per cent for a mixed group of 100 nonschizophrenic psychiatric patients. Friedman (1953) compared thirty schizophrenic and thirty normal Rorschach records and found median W percentages of 46 and 25 in the two groups, respectively, and median D percentages of 45 and 67. The differences for both W and D percentages were significant.

Form response as a diagnostic indicator. Research evidence consistently demonstrates a low F+ percentage to be a valid indicator of schizophrenia. Beck (1938) compared the records of eighty-one schizophrenic subjects and thirty-one nonpsychotic patients and thirty-three normal controls. He found mean F+ percentages of 61.5 for the schizophrenics and 83.9 for the controls. Rickers-Ovsiankina (1938) studied thirty-seven schizophrenics and twenty normal subjects of similar age, sex, and education and found mean F+ percentages of 66.9 in the schizophrenic group and 87.3 in the control group. The difference between these means was significant.

In a later study, Beck (1954) reported that the mean F+ percentage for 157 normals (79.2) was significantly larger than that of sixty neurotics (68.5), which, in turn, was significantly higher than that of sixty schizophrenics (61.2). Friedman (1952) found median F+ percentages of 61 from thirty schizophrenics and 84 from thirty normal controls. Berkowitz and Levine (1953) obtained mean F+ percentages of 60.0 for twenty-five schizophrenics and 80.0

for twenty-five neurotics. In both studies the normals exceeded significantly the schizophrenics in F+ percentage.

The cutting point of 60 appears to be well established as strongly indicative of schizophrenic diagnosis. Berkowitz and Levine (1953) obtained a significant relation between an F+ percentage of 60 or less and schizophrenia. Only three of twenty-five neurotics were this low in F+ percentage. Knopf (1956) compared the records of 100 schizophrenic subjects and 131 neurotic patients and found that a contingency table utilizing an F+ percentage of 60 as the cutting score yielded a significant Chi Square. Phillips and Smith (1953), comparing Rorschach records of 250 normal subjects, reported that an F+ percentage below 60 happened in only 5 per cent of the cases. These authors agreed that 60 per cent F+ should be considered the lower limit for a normal population.

Color response as a diagnostic indicator. Research evidence strongly indicates that the presence of one or more pure color response (C) discriminates schizophrenics from nonschizophrenics. Ricker-Ovsiankina (1938) reported one or more pure C response in eighteen of thirty schizophrenics, but only in one of twenty normal controls. Vinson (1960) also found the presence of pure C in eighteen of thirty schizophrenic subjects, but in only one of thirty nonschizophrenic psychiatric patients. Weiner (1964) reviewed the Rorscharch protocols of 172 mostly ambulatory psychiatric patients and reported only twenty-one patients to have given C responses. However, sixteen of these patients were schizophrenic and the presence of C responses significantly differentiated between the schizophrenic and nonschizophrenic patient groups.

Rapaport and his co-workers (1946), who interpreted pure color response as an indication of abandonment of control over affect, also found valid discrimination of schizophrenic from nonschizophrenic groups on the basis of C responses. They reported one or more C in 76 per cent of undifferentiated schizophrenics, 48 per cent of paranoid schizophrenics, and thirty per cent of neurotic subjects, as well as in twenty-four per cent of depressed subjects and eleven per cent of normal controls.

Although elevated C responses appear validly to indicate a schizophrenic illness, the appearance of pure color responses is influenced by other factors. The normative data provided by Gardner (1936) on 100 normals and by Phillips and Smith (1953) on 250 normal subjects, revealed that Cards VIII and X normally produce FC responses with normal persons, who also give C responses on Card IX and to a lesser degree on Card II. Hence, the presence of C responses on Cards IX AND X attenuates the diagnosis of schizophrenia.

Rapaport et al., (1946) indicated that two types of color responses have less pathological significance than other pure color responses; namely, "blood" to the red area of Cards II and III, and some variation of "paint" on any of the last three cards. In the Rapaport studies the C responses occasionally given by depressed and neurotic subjects were almost entirely of these two types, and the exclusion of such C responses strikingly sharpened the differentiation of schizophrenics from nonschizophrenic subjects on the basis of C responses (Rapaport et al., 1946, pp. 260-261).

Finally, the diagnostic implication of pure color responses for schizophrenia is influenced by the degree to which C responses are balanced by FC responses. Schizophrenics produced significantly lower numbers of FC responses than normals. In a study by Beck (1954), the mean scores of FC were .40 and 1.36 for schizophrenics and normals respectively. An analysis by Rapaport et al., (1946) of the prevalence of C in relation to CF and FC responses indicates the importance of this consideration. They found 53 per cent of undifferentiated and 33 per cent of paranoid schizophrenic subjects to have frequency of C responses equal to or greater than the sum of CF and FC responses. Only eighteen per cent of depressed, six per cent of neurotics and four per cent of normal subjects had a frequency of C responses equal to or greater than the total number of CF and FC responses. Schizophrenics differed significantly from the nonschizophrenic subjects in this analysis.

Human movement (M) as a diagnostic indicator. Comparison between schizophrenic and control groups in average M have yielded inconsistent findings. In one study, Beck (1938) reports no differences in M responses between schizophrenics, nonpsychotic psychiatric patients, and normal subjects. Rickers-Ovsiankina (1938) found no difference in mean M production between schizophrenic and normal groups, but noted that fifteen of her thirty-seven schizophrenic subjects, while only four of twenty normals, had zero M. Nevertheless, this low M criterion cannot be expected to differentiate all groups of schizophrenics from normals.

Beck (1954), in another comparison, found a significantly higher frequency of M in 157 normals (3.50) than in sixty schizophrenics (1.75). Knopf (1956), who compared 100 schizophrenics with 106 nonschizophrenic psychiatric patients, conducted two analyses of his data in order to identify those of his results that were stable. In one analysis the schizophrenics were significantly lower in M than the controls. However, when fifty cases were randomly selected from each group, no significant difference in M was found.

Content as a diagnostic indicator.

Sex response. Studies have provided ample evidence that sex responses occur more often in the protocols of schizophrenic than of nonschizophrenic subjects. Beck (1954) found the mean number of sex responses (.58) in the records of schizophrenics to be significantly greater than the mean number provided by neurotics (.17) and normal (.02) subjects. Knopf (1956) reported a larger mean number of sex responses in schizophrenic than in nonschizophrenic psychiatric patients.

Orme (1962), comparing 1010 Rorschach records, found that the percentage of subjects giving one or more sex responses was significantly greater among 229 schizophrenics than among eighty alcoholics, 188 melancholics, 110 psychopaths, 245 neurotics, and 158 organic patients. Vinson (1960) also reported the presence of sex responses significantly more frequently in the records of his thirty schizophrenics than in his thirty normal subjects.

Beck et al., (1950) found a mean frequency of .02 sex responses in 157 normal subjects. Brockway et al., (1954) also found a median of zero sex responses in a normal sample of 126 subjects, with a sex frequency of .3 falling at the eightieth percentile. These data from normal groups imply that the presence of sex responses is a diagnostically valid criterion for psychopathological implication.

Anatomy response (At). Knopf (1956) found a significant difference in At responses between 100 schizophrenic and 106 nonschizophrenic psychiatric patients. Their mean numbers of At responses were 2.6 and 1.7, respectively. Shereshevski-Shere, Lasser, and Gottesfield (1953), studying At responses in the records of thirty-six schizophrenic and thirty-six normal subjects, found that the presence of one At response did not distinguish the schizophrenics from the normal subjects. However, the presence of two or more At responses significantly discriminated the schizophrenics from the normal subjects. The most efficient criterion score was three or more At's, which was obtained by sixty-one per cent of the schizophrenics but only fourteen per cent of the normal subjects.

Alphabet response (Al). Phillips and Smith (1953) illustrated Al responses with "W", "A", "7", "3", "square", and "point" (p. 123). They reported that such responses are extremely rare in all clinical groups and are associated with severe psychopathology when they occur. Orme (1963) supported this conclusion in a study of 1311 Rorschach records. Only sixteen of these records contained Al responses, but thirteen of the records were from schizophrenic subjects.

Popular response (P). Research has indicated that P significantly discriminates schizophrenics from normal and neurotic subjects. In 1938, Beck found mean P's of 3.95 for a schizophrenic group and 5.92 for a control group. The mean values of the two groups differed significantly. In a later study, Beck (1954) reported a comparison of the mean P's of 157 normal subjects (7.0), of sixty neurotics (5.5), and of sixty schizophrenic (4.9) subjects. Both the neurotics and the normals significantly exceeded the schizophrenics in production of P responses.

Friedman (1952), using Beck's list, scored the Rorschach protocols of thirty schizophrenics and thirty normals, and obtained median P's of 4.25 and 5.38, respectively. Knopf (1956) found mean P's of 4.0 in a group of 100 schizophrenics and of 5.0 in a group of 131 neurotics, using Hertz' list of popular responses. Berkowitz and Levine (1953), using Klopfer's list, obtained mean P's of 3.84 and 4.88, respectively, in a sample of twenty-five schizophrenics and twenty-five neurotics. The differences between groups were significant in each of the three studies.

Verbalization as a diagnostic indicator. Rapaport (1946) described different types of deviant verbalization occurring in Rorschach responses. Three types of deviant verbalizations are mentioned by most of the authors as strong evidence of a diagnosis of schizophrenia.

Autistic logic. Autistic logic is indicated by any response in which the reasoning or syllogism used is fallacious. For example. "The north pole. . . because it is at the top" (Rapaport, 1946, p. 341). "Skunk--a small portion of the picture indicates to me it's a small animal" (Holt and Havel, 1960, p. 291). Autistic logic occurs infrequently but is highly suggestive of thought disorder when it does. Rapaport et al., (1946) found one or more instances of autistic logic in twenty-three per cent of their schizophrenics, but not a single occurrence in any of their nonschizophrenic groups.

Contamination. Contamination is indicated when a subject blends two or more sepatate responses to the same Rorschach location into a single response. For example: "The liver of a respectable statesman" (Rorschach, 1921, p. 38). "This detail looks bloody and it looks like an island, so it must be a bloody island" (Rapaport, 1946, p. 339). Research reports leave no doubt that Contamination represents a severe impairment of the thinking process and indicates schizophrenia. Bohm (1958, p. 270) concludes from his review of the literature that the contaminated whole response seems to be a specific symptom of schizophrenic thinking. Rapaport et al., (1946) found that contaminated responses occurred almost exclusively in their schizophrenic subjects.

Confabulation. Confabulation is indicated when a subject overgeneralizes from the detail to the whole. For example, Card VI may be called a cat because the fine projections at the top look like whiskers (Rapaport, p. 330). Scoring categories for Confabulation are DW, DdW, and DdD.

Beck (1938) found confabulations in the records of forty-eight per cent of eighty-one schizophrenics, but only eleven per cent of a mixed control group of sixty-four normal persons and nonschizophrenic psychiatric patients. Rieman (1953), comparing the Rorschach records of fifty neurotics and fifty schizophrenics, found the presence of Confabulation to discriminate significantly between groups. Siegel (1953) found that fifty per cent of a group of thirty diagnosed hebephrenic and catatonic schizophrenics gave confabulated responses, whereas none of the thirty paranoid schizophrenics and thirty normal subjects confabulated.

Wechsler Intelligence Tests

Total score as a diagnostic indicator. Research evidence based on total scores on the Wechsler provide an equivocal conclusion to the question whether low intellectual performance is predictive of susceptibility to schizophrenia or schizophrenic illness produces intellectual deficits.

Payne (1961) summarized thirty studies comparing the observed I.Q. scores of schizophrenics and nonschizophrenics on the basis of results on the Wechsler-Bellevue. The mean I.Q.'s reported for 1284 schizophrenics and 987 neurotics were 96.08 and 105.01, respectively. Differential I.Q.'s were also reported for the different schizophrenic subgroups, as shown by the following mean scores over the various studies: paranoid schizophrenics, 94.84; simple schizophrenics, 88.23; catatonic schizophrenics, 82.80; and hebephrenic schizophrenics, 80.60. Payne warns that the results are ambiguous, in that they do not indicate whether schizophrenia happens to occur primarily among people of relatively limited mental ability.

Rabin (1944) examined thirty schizophrenics with the Wechsler-Bellevue from one to thirty-five months after their initial testing on hospital admission. Only twenty per cent of the schizophrenics had lost five or more I.Q. points, while more than fifty per cent of the group had gained five or more I.Q. points. Hence, he rejected the notion of intellectual deterioration in schizophrenic disturbance.

A study by Haywood and Moelis (1963) might add a new dimension. They observed a difference between therapeutically improved and unimproved schizophrenics in test-retest I.Q.'s. They obtained twenty clinically improved patients who had gained an average of 7.30 I.Q. points during their hospitalization, while twenty unimproved schizophrenics had lost an average of 2.65 I.Q. points. Both the gain and the loss were significantly different from chance.

Smith (1964) retested twenty-four schizophrenic patients eight years after they had been given the Wechsler-Bellevue and other scaled measures such as the Army General Classification Test. No significant differences were found between the test-retest I.Q.'s.

Albee et al., (1963) compared the Wechsler I.Q. scores of 112 hospitalized schizophrenics with individual intelligence tests taken when they were in elementary school. No significant differences were found between the schizophrenics' premorbid intelligence quotient and the score following the onset of schizophrenia.

Intratest scatter as a diagnostic indicator. Intratest scatter is defined by a performance pattern that is inconsistent with the difficulty of test items. Rapaport et al., (1945) calculated for each subtest of the Wechsler the percentage of errors occurring on easy, intermediate, and difficult items. Using percentage of errors on easy items as the index of intratest scatter, they found that their total schizophrenic sample was more significantly scattered than their neurotic or normal groups on Information, Comprehension, and Similarities. Their acute and chronic schizophrenics were significantly more scattered than their neurotics and normals on Arithmetic, Picture Completion, and Picture Arrangement.

Holzberg and Deane (1950) calculated a scatter coefficient by first subtracting the total number of items for which any credit is given on a subtest from the number of the last item for which any credit is given, and then dividing this remainder by the total raw score of the subtest. They found significant scatter differences between twelve schizophrenics and twelve neurotics on Comprehension, Picture Completion, and Block Design.

Intertest scatter as a diagnostic indicator. Intertest scatter is defined by relatively good performance on certain tests and relatively poor performance on others. Gilliland (1940) found greater intertest variability in his psychotic group. However in 1943, Gilliland et al., could not replicate this finding. Olch (1948) reported significantly greater intertest variability in a schizophrenic than in a normal control group. Meanwhile, Garfield (1948) found no differences in scatter between schizophrenics and nonschizophrenics. However, in 1958, Trehub and Scherer devised a scatter index based on mean subtest scores. These authors were able to classify sixty-six per cent of their subjects correctly as schizophrenic or nonschizophrenic in a sample of 166 schizophrenic and 103 nonschizophrenic psychiatric patients. Wechsler (1958) reported comparisons between fifty-eight schizophrenic subjects and fifty-eight matched normal subjects. The mean of the average deviations of the schizophrenic subjects was significantly greater than that of the controls.

Specific subtests as diagnostic indicators.

Comprehension. The Comprehension subtest of the WAIS measures the capacity for practical judgment. Research results have demonstrated consistently the hypothesized relationship of impaired judgment to both schizophrenia and deficient Comprehension subtest performance. Olch (1948) found that his thirty-two schizophrenics performed significantly poorer than his control group. Similar results were obtained by Senf, Huston, and Cohen (1955). Garfield (1948) compared sixty-seven schizophrenics with forty-six nonschizophrenic psychiatric subjects and found that schizophrenics had Comprehension scores below their mean subtest scores significantly more often than the controls. Rogers (1951) obtained Comprehension scores below Vocabulary scores in forty-nine per cent of eighty-three schizophrenics but in only nineteen per cent of 100 neurotic subjects, this difference being quite significant. Jastak (1953), rank ordering the mean scale scores of forty schizophrenic and forty neurotic subjects, found that the Comprehension performance of the schizophrenic patients was relatively poor, whereas that of the neurotic patients remained relatively high.

Wechsler (1958) indicates that a difference between Comprehension and Vocabulary of at least three scale scores is necessary for significance at the fifteen per cent level. McNemar (1957) states that a difference of four scale scores between the two subtests is necessary to guarantee nonchance occurrence. Rapaport et al. (1945) found that their schizophrenic group's scores on the Comprehension subtest were three or more points below the Vocabulary scores. Consistent with the recommended criterion for Comprehension deficiency are the findings of the study by Merrill and

Heathers (1952). Of 429 normal college students, only seven per cent had Comprehension scores three or more points below their Vocabulary scores.

Picture Completion. The Picture Completion (PC) subtest of the WAIS measures the ability to differentiate essential from nonessential elements. Olch (1948), Garfield (1948), Senf et al. (1955), and Rogers (1951) all found that schizophrenics perform poorly on the Picture Completion test. Rapaport et al. (1945) found that more than half of their sample of acute and chronic schizophrenic subjects had PC-Vocabulary discrepancies of three or more points, whereas seventy-six per cent of a normal control group had discrepancies of two points or less. The magnitude of their PC-Vocabulary discrepancies significantly differentiated these schizophrenics from the control subjects.

Wolfson and Weltman (1960) compared Picture Completion errors made by 110 normals and 110 psychiatric patients, eighty-two of whom were schizophrenics. They listed the errors made by normal subjects and patients. They also included errors made only by schizophrenic patients. Consequently, any unusual error reflects impaired ability to differentiate essential from nonessential and suggests schizophrenia.

Digit Symbol and Block Design. Schizophrenic patients have consistently been reported to perform more poorly on Digit Symbol than on any other WAIS subtests (Olch, 1948; Garfield, 1949; Jastak, 1953). They score lower on Digit Symbol than neurotically depressed and anxious subjects of comparable intelligence (Beck, Feshbach, and Legg, 1962).

The Block Design subtest appears to be insensitive to schizophrenic illness. Garfield (1948), comparing the subtest deviations from mean subtest scores of sixty-seven schizophrenic and forty-six nonschizophrenic psychiatric patients, found the schizophrenics displayed fewer negative and more positive Block Design deviations from mean subtest scores than the nonschizophrenic group. In 1949, Garfield found Block Design the third highest Wechsler scale score among 109 schizophrenic subjects. Olch (1948) observed Block Design to be the second highest Wechsler in a group of young schizophrenics and fourth highest among older schizophrenic subjects.

The MMPI

Wauck (1950) concluded that the Schizophrenia Scale by itself could not be used as a valid diagnostic tool in his sample of eighty schizophrenic patients. A comprehensive item analysis was carried out in which the items of the Schizophrenic Scale itself proved to be nondiscriminatory. A few years later, Harris and Lingoes (1955) discovered the following subscales: social alienation, emotional alienation, bizarre sensory experiences, and lack of ego mastery. The latter subscales are subdivided into cognitive, conative and defective inhibition.

A technique for objective configurational analysis was applied to 210 MMPI profiles by Taulbee and Sisson (1957). Sixteen scale pairs were obtained which differentiated the schizophrenic group from the neurotic group. The schizophrenics tended to be higher than the neurotics on Scales 8 (Schizophrenia), 6 (Paranoia), 9 (Hypomania), 4 (Psychopathic Deviate), and 5 (Masculinity-Femininity). However, this configurational analysis of the MMPI profiles offered little promise as a diagnostic measure when Garfield and Sineps (1959) applied it to a group of 129 patients in different diagnostic groups.

The MMPI was administered to thirty-three false negatives who had not been diagnosed as schizophrenic but later were diagnosed schizophrenic, and to twenty-seven true positives for whom the diagnosis of schizophrenia had been accurately applied, and to thirty-three true negatives. Configurational analysis using a group of psychotic signs indicated that the MMPI patterns of the thirty-three false negatives were essentially like those of the twenty-seven true positives and were substantially different from the thirty-three true negatives. The signs are: (1) T scores on four or more of the clinical scales over 70. (2) F>65. (3) Sc>Pt. (4) Sc or Pt or Ma>Hs and D and Hy. (5) Pa or Ma>70. (6) D>Hs and Hy (Peterson, 1954).

In 1959, Eichman claimed that the schizophrenic signs obtained from a configurational analysis of the MMPI profile demonstrated significant predictive accuracy. The signs were grouped into five categories: L, K, F, Mf, and neurotic-psychotic, and were subjected to discriminant function analysis. A weight sign score (46) derived from this analysis was cross-validated in the same hospital and in three other hospitals with approximately seventy-five per cent accuracy in differentiating schizophrenics from controls.

The Validity and Reliability of Projective Techniques

Projective techniques have established their own status in the field of psychological testing. Eighty-one projective techniques were listed in the book *Personality Tests and Reviews*, edited by O. K. Buros (1970). Voluminous research has been published on the topic of the reliability and validity of projective techniques. The latest edition of the *Mental Measurement Yearbook* (1972), for instance, recorded 4202 references to Rorschach methods and 1533 studies relating to the Thematic Apperception Test. Research on

Rosenzweiz Picture Frustration Study and House-Tree-Person were 247 and 127 respectively.

To review all of the research on the validity and reliability of projective techniques would require a book. William H. Angoff (1971) from Educational Testing Service, Princeton, New Jersey, commented on the book *Personality Tests and Reviews* and concluded that "...in spite of the enormous quantity of research activity on the MMPI, not enough new information has been generated in the field of clinical assessment to warrant the development of a revision to the inventory". With respect to the Rorschach method, Angoff was of the opinion that "... in spite of the quantity of this research, the users of the Rorschach are apparently no closer to agreement on its validity, its usefulness, or even in the manner in which the test should be used than they ever were" (Angoff, 1971, p. 860).

Because of the vast quantity of research and the apparent lack of agreement among clinicians, this section will be limited to a presentation of special problems in establishing the reliability and validity of projective techniques.

Reliability is the degree of accuracy of a test in measuring whatever it measures (Jensen, 1959, p. 4). In psychometric practice, reliability is ordinarily established by repeating the test to determine the stability, or by equivalent forms of the test to demonstrate that each form is providing an adequate and stable measurement of the total variance sampled (Cronbach, 1970).

Test-retest reliability has been criticized as inappropriate because:

> 1. A retest is psychologically not the same experience as the initial test.
> 2. The subject may remember his initial responses and therefore retesting is only a measure of recall and not of reliability.
> 3. Projective techniques are so sensitive to the slightest changes in the subject, reflecting transient moods, etc., that a lack of correspondence between test and retest is said to be due to genuine changes in the subject (Jensen, 1959, Pp. 7-8).

To assess reliability by alternate forms of the same projective technique, one must overcome very substantial difficulties in creating equivalent forms. In an unstructured projective test, different subjects are free to respond selectively to different qualities of the stimulus material. Consequently, it is questionable whether a second set of blots or cards is really the equivalent of the first set in producing a similar number of responses, similar content of responses, or, in statistical terms, 'true variance' (Macfarlane and Tuddenham, 1951).

When it is not feasible to construct an alternative form, a solution may be found by splitting the test into equivalent halves. However, the split-half method has been viewed as inappropriate because, for example, the Rorschach and the TAT differ in the stimulus properties of the cards or the pictures. Hence, it is almost impossible to obtain equivalent halves (Watson, 1949; Sargent, 1945).

Other sources of error variance which could be producing low reliability estimates of projective techniques are: differences in scoring (clinicians could vary greatly in their ability to judge a protocol); differences in scoring philosophies, (as when clinicians believe that the projective protocol should be scored as a whole rather than by reference to specific atomistic components); and differences in protocol length and verbal fluency. (Murstein, 1965; Macfarlane and Tuddenham, 1951).

Some clinicians claim that projective techniques (for instance, the Rorschach method), disclose basic personality (Klopfer et al., 1954). This claim creates very complicated problems in the designing of validation studies because the claim is closely bound to the many-faceted aspects of personality theory. The investigator's brand of theory, whether explicitly formulated or implicitly assumed, does affect the formulation of the validation problem. And herein lies much of the confusion in this field. Furthermore, dynamics can be directly equated to a brief sample of manifest behavior as secured with projective techniques.

The specific concepts and constructs used to organize the empirical data of tests are central to what validation objectives are sought and how formulations of research tasks are made. It is, unfortunately, confronted with many overlapping concepts derived from Freudian, Jungian, psychophysicial, psychobiological or psychosocial orientations. This makes difficult a common statement of common problems amenable to research formulation, since research demands concepts that can be operationally defined and tested.

A major reason for the many inconclusive validity studies of projective techniques, according to Macfarlane and Tuddenham (1951), is that very few validation constructs have been specified and investigated. In other words, one of the major troubles in validation studies has been that a large unexplicit set of validation constructs has been sought simultaneously without realizing that each construct has to be explicitly formulated and tested against its own relevant and reliable criterion.

Other factors which could be involved in producing the inconclusive results of validation studies are: scoring variations; nosological categories of psychiatric diagnoses and clinician ratings as criteria against which the protocols are to be validated; and population sampling (Karen, 1968; Macfarlane and Tuddenham, 1951).

In spite of problems in the validation studies of projective techniques, in particular their low reliability and their inconclusive results, McArthur (1972) claimed that projective techniques, in particular the Rorschach, are still used daily in clinics. The question of why the Rorschach or other projective techniques continue to be so widely used is quite another problem and is beyond the scope of the present study.

The Reliability of Psychiatric Diagnosis

Psychiatric diagnosis was used in the present study as the criterion for the selection of the three experimental groups. Research on the reliability of the psychiatric diagnosis was reviewed, and is summarized below.

The study by Masserman and Carmichael (1938) has been often mentioned as evidence of the unreliability of psychiatric diagnoses. It was found that in 40 of the 100 cases the previous diagnoses were revised one year after discharge. It is apparent from the description by the authors that the changes in the diagnoses were justified because of the changes of the patients' conditions.

In another study, fifty-two white male patients were interviewed jointly by two or three psychiatrists (Ash, 1949). It was discovered that agreement with respect to a specific diagnostic category was obtained in 20 per cent of the cases for the three psychiatrists, and in from 31.4 per cent to 43.5 per cent of the cases when the psychiatrists were considered in pairs. Agreements on major diagnostic categories (psychosis, neurosis, and character disorder) occurred in 45.7 per cent of the cases for the three psychiatrists, and in from 57.9 per cent to 67.4 per cent of the cases for the pairs. The drawback of this study appears to be that the conference method contributed to agreement through the inevitable exchange of ideas.

Mehlman (1952) concluded from his investigation of diagnoses of 4,036 patients at a state hospital that the existing system of psychiatric classification provides little value for research and it should be revised.

The consistency of psychiatric diagnoses in a group of 794 naval enlisted men was examined by Hunt, Wittson, and Hunt (1953). They estimated the agreement of diagnoses between psychiatrists at the precommissioning station and at the hospital to which the cases were subsequently sent. Agreement on unsuitability for further service was 94 per cent. Overall agreement on the major categories (psychosis, psychoneurosis, and personality disorder) was 54 per cent, while agreement on specific diagnoses was 33 per cent.

Some limitation of the Hunt, Wittson, and Hunt study are: first, the diagnoses were based on a study of the clinical record rather than a direct examination of each individual by the physician making the diagnosis; secondly, since the primary function of the diagnoses was to determine suitability or unsuitability for service, this purpose influenced the type of diagnosis rendered; thirdly, since there was a definite time lapse of an unspecified period between the rendering of the two separate diagnoses, the acute conditions could have resolved during the interval between the diagnostic appraisals, thus contributing to a change in diagnosis.

A study by Schmidt and Fonda (1956) was based on 426 patients in Norwich State Hospital. The initial diagnosis was made by one of a group of eight psychiatric residents during the patient's first week in the hospital. The second diagnosis was made by one of a three staff psychiatrists during the patient's third week in the hospital. Excluding the organic cases, an overall rate of agreement of 42 per cent for the specific diagnostic categories occurred. The limitations of this study are the different levels of experience between residents and board-certified psychiatrists, and potential patient changes in the time between the assessment by the residents and staff psychiatrists.

However, the authors also reported the diagnoses of 426 patients made independently by pairs of staff psychiatrists. It was found that reliability of the schizophrenic diagnosis was .73. Classification of the diagnoses with respect to three major categories-- organic, psychotic, characterological -- showed that about four-fifths of such classifications by one psychiatrist were corraborated by another. Agreement with respect to diagnosis of the specific subtype of disorder occurred in only about half of the cases. It was concluded by the authors that satisfactory reliability had been shown for some of the psychiatric diagnoses.

The largest study found to date was that of Norris (1959), who reviewed the diagnoses of 6,263 patients seen initially in observation units, and subsequently admitted to a mental institution where they received a second diagnosis by another psychiatrist a few weeks later. Norris compared the diagnoses at the two institutions and found overall agreement of approximately 60 per cent. However, there was a very substantial representation of the organic psychoses, which had a high concordance (80%), as compared with the psychoneuroses and the character and behavior disorders, which had a concordance rate of 54 per cent and 43 per cent, respectively. A major limitation of the study was that the overall rate of agreement could have been influenced by the fact that the psychiatrists in the receiving hospital were aware of the diagnoses made in the observation unit.

Kreitman and his co-workers (1961) presented interesting results of a study regarding the reliability of psychiatric assessment. The subjects were 90 new referrals to the Chichester Mental Health Service. They were independently examined by pairs of psychiatrists at approximately three-day intervals.

Agreement on duration of present illness was obtained in about 60 per cent of the patients. Agreement on family history was obtained in about 85 per cent of the patients with agreement being lowest for those subjects over 55 years of age. Agreement on previous mental illness was reached in about 70 per cent of patients, with higher agreement among those diagnosed as having an organic illness.

Agreement when using broad diagnostic categories was attained in about 80 per cent of cases, and when specific diagnosis were used in about 65 per cent of the subjects. On comparing the assessment made on symptoms, the range of agreement rates obtained was from zero per cent to 85 per cent, with the highest rate relating to "depression" and the lowest rate relating to "aggression".

It is of particular interest that individual differences between psychiatrists were found to be of little importance in this study.

An investigation of the reliability of psychiatric diagnoses to minimize factors that would artificially lower or inflate the rate of agreement was designed by Beck and his colleagues (1962). Four certified psychiatrists, who had similar experience and teaching position, were randomly paired up to interview 153 outpatients.

Prior to interviewing, the psychiatrists had several meeting during which they discussed the various diagnostic categories, ironed out semantic differences, and reached a consensus regarding the specific criteria for each of the nosological entities.

The patients included in Beck's study were drawn randomly from new referrals to the psychiatric outpatients service of Philadelphia General Hospital and the Hospital of the University of Pennsylvania. The patients were interviewed within a week after their initial administrative "screening".

The overall agreement rate on specific categories was 54 per cent. A comparison was also made of the degree of concordance when only the major divisions (psychosis, neurosis, and character disorder) were used to classify the patients. It was found that for this analysis the agreement rate was 70 per cent.

Another comparison relevant to the problem of diagnostic agreement is the determination of the relationship of the degree of certainty (certain, fairly certain, or uncertain) in making diagnoses. It was found that when both psychiatrists were certain, they agreed in 81 per cent of the cases. When both were uncertain, they agreed in 25 per cent of the cases. All other combinations of certainty yielded 47 per cent to 50 per cent agreement.

An additional method of classification consisted of rating patients on a four-point scale along a single dimension; for example, the depth of depression. It was found that, when they used this method, the diagnosticians agreed within one scale unit in 99 per cent of the cases.

Sandifer, Pettus, and Quade (1964) reported a study based on 91 subjects who were first-admission patients, aged 15 to 59, in a public mental hospital.

Using twelve standard diagnostic categories, it was found that for all categories combined, there was a 57 per cent chance that the second diagnostician would render the same diagnosis. Schizophrenia (74 per cent) and Mental Deficiency (73 per cent) were the most reliable categories. The categories of Personality Disorder and Chronic Brain Syndrome obtained 66 per cent of agreement.

The authors indicated that neither the overuse or underuse of diagnostic categories by individual diagnosticians were significant factors in diagnostic disagreement in this study.

The study of Ward and his associates (1962), analyzing reasons for psychiatric diagnostic disagreement, appeared to be the most appropriate article to conclude the present review of the reliability of the psychiatric diagnosis.

One hundred and fifty-three outpatients were interviewed separately and diagnosed independently by pairs of experienced psychiatrists. In forty cases in which there was diagnostic disagreement on the specific diagnosis, a determination was made of the reasons for the disagreement. The authors found three sources of error. The primary reason for disagreement was inconsistency on the part of patients, who gave different material to different interviewers. The second primary reason was inconsistency on the part of the diagnosticians; namely, differences in eliciting covert material and in identifying the predominant pathology in mixed pictures. The third chief reason for disagreement was inadequacies of the nosological system itself: requiring impractical fine distinctions as in the diagnosis of psychophysiological reaction as opposed to conversion reaction; requiring unecessary decision of weighting as in the forced decision between psychoneurotic disorder and personality disorder when evidence of both entities are present; lack of clear criteria as in distinguishing between chronic undifferentiated schizophrenia and nonpsychotic disorder.

Hypotheses

Cattell (1957) was convinced that the factors empirically established in the Motivation Analysis Test best fit a psychoanalytic type of explanation. Hence, among the psychdynamic theories, the psychoanalytic theory of depression, schizophrenia and alcoholism was selected as the theoretical basis of the present investigation from which the hypotheses of the study were formulated.

Freud characterized depressive patients as over-reacting to loss of love objects, weak in ego strength and repression defense mechanisms, having guilty feelings, high in super-ego strength, having feelings of inferiority, and as low in self-esteem. To restore his self-esteem, the depressive patient desperately requires narcissistic supplies.

It is anticipated that, as a result of over-reacting to loss of love objects, depressive patients will score low on Mating Erg. Depressive patients are also described as weak in Ego strength and low in self-esteem, and, consequently, could be expected to score low on Assertiveness Erg, Total Motivation and Self-concept Sentiment. Since depressive patients have a strong Superego and hostile, aggressive and guilty feelings, it is expected that they will score high on Superego Sentiment and Pugnacity-sadism Erg. It is also reasonable to expect that these depressed individuals who desperately require narcissistic supplies will obtain high scores on Narcism-comfort Erg.

Since the Ego of depressive patients (as well as of other clinical patients) does not operate effectively on the reality principle or secondary process, and since the conflict model employed in the MAT postulates that the wishful, not yet reality tested motivational components exceed or dominate the reality tested motivational components (Cattell, 1957; Delhees, 1968), one could predict that depressive patients will score high on the Conflict scores of the dynamics mentioned above.

Hypothesis I. On the Motivation score, the depressive group will score lower on Self-concept Sentiment, Mating Erg, Assertiveness Erg and Total Motivation than the control group, but higher on Narcism-comfort Erg, Pugnacity-sadism Erg, and Superego Sentiment.

Hypothesis II. On the Conflict score, the depressive group will exceed the normal group on Narcism-comfort Erg, Superego Sentiment, Self-concept Sentiment, Mating Erg, Pugnacity-sadism Erg, Assertiveness Erg and Total Conflict.

TABLE II

HYPOTHESES ON THE MOTIVATION SCORES OF THE CLINICAL GROUPS WHEN COMPARED TO THE CONTROL GROUP

Variable	Depressives	Schizophrenics	Alcoholics
Fear Erg			High
Narcism-comfort Erg	High	High	High
Superego Sentiment	High	Low	
Self-concept Sentiment	Low	Low	Low
Mating Erg	Low		
Pugnacity-sadism Erg	High		High
Assertiveness Erg	Low	Low	Low
Total Motivation	Low	Low	Low

The schizophrenic, having regressed to the early narcissistic level, is in a stage before the ego and the superego become differentiated from the id. According to this Freudian position, one would expect:

Hypothesis III. On the Motivation score, the schizophrenic group will score significantly lower on Assertiveness Erg, Superego Sentiment, Self-concept Sentiment and Total Motivation, but higher on Narcism-comfort Erg than the control group.

Hypothesis IV. On the Conflict Score, scores of the chronic schizophrenic group will be significantly higher than the control group on Narcism-comfort Erg, Superego Sentiment, Self-concept Sentiment, Assertiveness Erg, and Total Conflict.

The alcoholic demands excessive narcissistic supplies--love and affection--to cope with hostile impulses and guilty feelings which, in turn, are provoked by tension, anxiety, depression, a sense of aloneness and frustration. These feelings are the consequence of early childhood deprivation. The alcoholic, as seen by the psychoanalytic group, possesses a predisposition towards addiction because of early security-threatening experiences of deprivation.

TABLE III

HYPOTHESES ON THE CONFLICT SCORES OF THE CLINICAL GROUPS WHEN COMPARED TO THE CONTROL GROUP

Variable	Depressives	Schizophrenics	Alcoholics
Fear Erg			High
Narcism-comfort Erg	High	High	High
Superego Sentiment	High	High	
Self-concept Sentiment	High	High	High
Mating Erg	High		
Pugnacity-sadism Erg	High		High
Assertiveness Erg	High	High	High
Total Conflict	High	High	High

Since alcohol dispels frustration, tensions, or anxiety, provides means for expressing hostile feelings, and supplies the symbolic gratification of the narcissistic need, there is reason to expect that alcoholics will score high on Fear Erg, Pugnacity-sadism Erg and Narcism-comfort Erg. One could also expect that alcoholics will score low on Total Motivation, Assertiveness Erg and Self-concept Sentiment, for patients with alcohol addiction possess a weak Ego strength and shaky identification.

Hypothesis V. On the Motivation score, the alcoholics will be low in Assertiveness Erg, Self-concept Sentiment and

Total Motivation, but high in Fear Erg, Pugnacity-sadism Erg and Narcism-comfort Erg compared to the control group.

Hypothesis VI. On the Conflict score, the alcoholics will score higher than the normals on Fear Erg, Narcism-comfort Erg, Self-concept Sentiment, Pugnacity-sadism Erg, Assertiveness Erg, and Total Conflict.

CHAPTER III

RESEARCH DESIGN

The Sample

The research consisted of two parts. The first part of the study attempted to measure the distinctive features of the ten factors provided by the MAT among the experimental groups and a normal group. Phase two of the research involved an investigation into changes in selected patients during hospitalization.

The design of the first portion of the study involved a sample consisting of two major groups: experimental (psychiatric patients) and control (general population). Depressive, chronic schizophrenic and alcoholic groups were selected as the experimental sample.

The first experimental group (A) included thirty-two depressed patients (twenty-two females, ten males) from the University of Alberta Hospital, Edmonton, psychiatric wards, who ranged in age from seventeen to sixty-three, with a mean age of 35.56 years and a standard deviation of 11.49 years. The group's level of formal education had a range of six to nineteen years, a mean of 11.9 years, and a standard deviation of 2.36. Depressive patients with grade twelve or better accounted for 51.3 per cent of the group, while 31.3

per cent had attained grades ten or eleven, and 17.4 per cent had grade nine or less.

TABLE IV

DESCRIPTION OF THE SAMPLE

	Sex		AGE		EDUCATION	
VARIABLE	MALE	FEMALE	MEAN	S.D.	MEAN	S.D.
Depressive Group A	10	22	35.36	11.49	11.90	2.36
Schizophrenic Group B	16	16	39.06	10.54	9.80	2.52
Alcoholic Group C	22	10	41.53	8.95	10.47	2.18
Total Clinical Groups	48	48	38.72	10.56	10.73	2.49
Control Group	16	16	38.66	10.91	10.97	2.58

A second experimental group (B) consisted of sixteen male and sixteen female patients at the Alberta Hospital diagnosed as chronic schizophrenics. The mean age of this group was 39.06 years, and the standard deviation 10.54. The average educational level attained by these schizophrenic subjects was 9.8 years, with a standard deviation of 2.52. A major portion of this sample had grade nine or less education. There was equal distribution of patients in terms of percentage in both the middle and the higher levels of education, namely, 28.1 per cent.

Twenty-two males and ten females addicted to alcohol and receiving treatment at the Henwood In-patient Treatment Centre for alcoholics formed the third experimental group (C). Their mean age was 41.53 years, with a standard deviation of 8.95. The mean educational level attained by this group was 10.47 years, with a standard deviation of 2.18. The largest segment of this sample, 40.6 per cent, had attained grades ten or eleven, while 31.3 per cent had grade twelve or higher education, and 28.1 per cent had grade nine or less education.

TABLE V

DISTRIBUTION OF SUBJECTS ACCORDING TO
THEIR EDUCATIONAL LEVEL

Group	GRADE IX OR LESS		GRADE X & GRADE IX		GRADE XII OR HIGHER	
	No. of Ss	Per Cent of Total	No. of Ss	Per Cent of Total	No. of Ss	Per Cent of Total
Depressive	2	17.4%	10	31.3%	20	51.3%
Schizophrenic	14	43.8%	9	28.1%	9	28.1%
Alcoholic	9	28.1%	13	40.6%	10	31.3%
Total Clinical	25	26.0%	32	33.3%	39	40.7%
Control	8	25.0%	11	34.4%	13	40.6%

It is of interest that 51.3 per cent of the depressive group had grade 12 or higher compared to 28.1 per cent of the schizophrenics and 31.3 per cent of the alcoholic group. While only 17.4 per cent of the depressive patients had nine years or less of education, this category accounted for 28.1 per cent of the alcoholic patients and 43.8 per cent of the chronic schizophrenics. It appears that, in this particular sample, depressive illness interrupted the completion of the subjects' education less frequently than did schizophrenic illness.

Of significance, too, was the fact that the alcoholic group had the highest mean age and the lowest standard deviation, while the converse was true of the depressive group. These findings are consistent with the clinical observation that depression can happen to any age group, while the diganosis of alcoholism rarely occurs in the early twenties group.

Although sex, age and educational level were not the essential dimensions of the present investigation, these factors were taken into consideration on the basis of the total experimental group when the data for the control group were gathered. The clinical groups were composed of 48 males and 48 females. Their mean age was 38.72, with a standard deviation of 10.56. The average educational level attained by this group was 10.73 years, with a standard deviation of 2.49.

The control group of sixteen males and sixteen females was drawn from University Hospital personnel of various occupational levels and from among their relatives and friends. The mean age of the control group was 38.66, with a standard deviation of 10.91, while the average educational level attained by group members was 10.97, with a standard deviation of 2.58. In order to be selected for the control group, individuals had to be functioning adequately occupationally and free from evidences of depressive illness, alcohol addiction, and schizophrenic illness.

The random nature of the control group in the present study could be challenged in that fifteen of the thirty-two subjects were University Hospital employees. Four of the fifteen hospital employees held professional-level positions: two nurses, one occupational therapist, and one psychiatric resident. Three of the female subjects worked in the kitchen unit, while two others were employed as housekeepers. Four of the male subjects were employed as painters, and the remaining two as janitors.

It was mentioned above that selection of the subjects in the normal sample was controlled for sex, age, and educational level. Consequently, the control group has its own specific characteristics, and is not a completely random sample of the general population.

Definitions

The Diagnostic and Statistical Manual of Mental Disorder (DSM-II) published by the American Psychiatric Association in 1968 is the reference most frequently used by psychiatrists on this continent when attempting to classify psychopatholocal conditions. According to the DSM-II, schizophrenia

> includes a group of disorders manifested by characteristic disturbances of thinking, mood and behavior. Disturbances in thinking are marked by alterations of concept formation which may lead to misinterpretations of reality and sometimes to delusions and hallucinations, which frequently appear psychological self-protective. Corollary mood changes include ambivalent, constricted and inappropriate emotional responsiveness and loss of empathy with others. Behavior may be withdrawn, regressive and bizarre (p. 33).

Four types of schizophrenia are traditionally delineated: simple, hebephrenic, catatonic, and paranoid.

Simple schizophrenia is "characterized chiefly by a slow and insidious reduction of external attachments and interests and by apathy and indifference leading to impoverishment of interpersonal relations, mental deterioration, and adjustment on a lower level of functioning" (DSM-II, p. 33).

Hebephrenic schizophrenia is "characterized by disorganized thinking, shallow and inappropriate affect, unpredictable giggling, silly and regressive behavior and mannerisms, and frequent hypochondriacal complaints. Delusions and hallucinations, if present, are transient and not well organized" (p. 33).

Catatonic schizophrenia can be differentiated into two subtypes, the first characterized by "excessive and sometimes violent motor activity and excitement, and the other by generalized inhibition manifested by stupor, mutism, negativism, or waxy flexibility" (DSM-II, pp.33-34).

Paranoid schizophrenia is characterized by "the presence of persecutory or grandiose delusions, often associated with hallucinations. Excessive religiosity is sometimes seen. The patient's attitude is frequently hostile and aggressive, and his behavior tends to be consistent with his delusions" (DSM-II, p.34).

Alcoholism is defined in the DSM-II as follows:

> This category is for patients whose alcohol intake is great enough to damage their physical health, or their personal or social functioning, or when it has become a prerequisite to normal functioning (p. 45).

Several types of drinking patterns have been mentioned by various authors (Jellinek, 1960; Buss, 1968; Ullmann and Krasner, 1969).

Alpha alcoholism is characterized by the use of alcohol as a means of alleviating bodily or emotional pain. A person is able to control the amount consumed and to abstain from drinking. However, the drinking pattern violates the rules of society as to when, where, and amount. The major consequence of alpha pattern alcoholism consists of a drop in work efficiency and disturbed personal relations.

Beta alcoholism is characterized by physical complications such as polyneuropathy. The incentive for the heavy drinking that leads to such complications may be due to the social custom in conjunction with poor nutritional habits. Nutritional deficiency diseases, as well as a lessened life span and low vocational productivity are the main effects.

Gamma alcoholism is characterized by an acquired increased tissue tolerance for alcohol. Thus larger amounts have to be consumed to yield the desired effect. It is in this pattern that withdrawal symptoms, physical dependence--"craving," and loss of control occur. Gamma alcoholism produces the greatest and most serious kinds of damage.

Delta alcoholism is characterized by an increased tolerance of alcohol, withdrawal symptoms and physical dependence. The major difference between delta and gamma alcoholism is that the delta alcoholic cannot refrain from drinking but is able to control the amount of intake at any given time. The gamma alcoholic can stop drinking for weeks or months but loses all control when he tries even a single drink. The delta pattern is typical of France or Latin wine-drinking countries. The gamma pattern is typical of whiskey-drinking countries such as the United States.

Although depression was not defined in the _Diagnostic and Statistical Manual of Mental Disorders_, the following list of symptoms of depression was agreed upon by several authors (Curran and Partridge, 1965; Beck, 1967; Buss, 1968; Mendel, 1970): (1) A sad, unhappy, apathetic mood with feelings of loneliness. (2) A negative self-concept associated with ideas of guilt, self-degradation and pessimism. (3) Behavior change: psychomotor retardation or agitation. (4) Somatic changes: loss of appetite, loss of weight and loss of libido. (5) Regressive and self-punitive wishes: desires to escape, suicidal wishes or attempts.

Depression can be divided into endogenous vs. exogenous, agitated vs. retarded and psychotic vs. neurotic. When depression is caused by internal factors or by some biological derangement, it is called endogenous. If it is caused by external factors such as toxins and bacteria, it is labelled exogenous. Recent writers have equated exogenous with psychogenic factors.

Depression has been characterized also in terms of the predominant activity level--agitated and retarded.

Neurotic and psychotic depression are traditionally differentiated by whether there is a precipitating event. The neurotic presumably becomes depressed because of a loss, or a rejection, while psychotic depression presumably occurs in cycles without a clear precipitating event. This distinction has been challenged by some clinicians who claim that there is no difference between psychotic depression and neurotic depression. The difference is only a matter of degree (Buss, 1968; Beck, 1967; Mendel, 1970).

The Procedures

Because of limited accessability to patients' records and the limited amount of time patients in the various mental institutions were available for research, the only criterion used in forming the three experimental groups was the psychiatric diagnosis. The psychiatric diagnosis appeared to be an adequate criterion for the present investigation because, first, it was unlikely that a depressed patient would be diagnosed as a chronic schizophrenic or an alcoholic. Secondly, the refined classification in each pathological group was not required for the present study. If significant differences were found in the psychodynamics of the three clinical groups, then the next logical procedure would be to investigate whether the four schizophrenic groups would produce different or similar psychodynamic profiles.

The MAT was administered in a group setting of four to ten patients when the data for the schizophrenic and alcoholic groups were collected. Individual attention was given to the subjects during the testing when this was required.

The MAT was administered individually to depressive patients at the University Hospital where the researcher was a staff member. Depressive patients who had a former diagnosis of schizophrenia, hysterical personality, alcoholism or organicity were excluded from the present sample.

Henwood Institute is a centre which accepts only those patients with alcohol addiction. The therapy at Henwood is designed to deal with alcoholic problems.

The Alberta Hospital is a provincial mental institute. Patients who need a longer term of psychotherapy are confined to this institution. Most of the patients in the present sample had been in the hospital with a diagnosis of schizophrenia for at least four years. Chronic schizophrenics confined in the Alberta Hospital in the present sample were not in the acute depressive state, as was true of chronic schizophrenic patients admitted to the University Hospital. However, the decision was made to exclude chronic schizophrenics with depression from the study.

Thirty depressive patients at the University Hospital participated in the second portion of the study to investigate psychodynamic changes as measured by the MAT after hospitalization. These patients received an administration of the MAT and the Beck Depression Inventory after their admission. All subjects were rated by the researcher according to the Hamilton Rating Scale in the process of the interview. The Beck Depression Inventory and the Hamilton Rating Scale were used as a more objective and quantitative manner of measuring change.

After the attending psychiatrist and his staff had determined that their patients had improved and further hospitalization was not required, the same tests and rating scale were readministered to the experimental group to make possible a comparison of pre- post-test results.

Only eighteen patients were able to complete both testing sessions. The shortest and the longest lengths of hospitalization were four weeks and four months respectively.

CHAPTER IV

STATISTICAL METHODS AND FINDINGS

All tests were scored by the researcher. The scores were transferred to IBM cards for computer analysis. Multivariate analysis of variance and univariate analysis of variance (Hummel and Sligo, 1971) procedures were employed to investigate whether or not the MAT differentiated between the distinctive features of the major clinical groups and the control group. The multivariate procedure consisted of one-way multivariate analysis of variance and a test for parallelism on the MAT profiles among the clinical groups and the control group (Morrison, 1967).

A two-way analysis of variance and Scheffé's multiple comparison of means test (Wiener, 1962) were used to complete the univariate analysis of variance. The distribution of subjects in each sample according to their sex, age, and educational level in the two-way analysis of variance is illustrated in Table VI.

TABLE VI

DISTRIBUTION OF SUBJECTS ACCORDING TO SEX, AGE, AND EDUCATIONAL LEVEL IN THE TWO-WAY ANALYSIS OF VARIANCE

GROUPS	SEX		AGE		EDUCATIONAL LEVEL	
	Male	female	≤39	≥40	≤Gr.11	≥Gr.12
Depressive	10	22	20	12	12	20
Schizophrenic	16	16	15	17	23	9
Alcoholic	22	10	16	16	22	10
Control	16	16	15	17	19	13

The statistical methods used to investigate whether or not the MAT measures change through hospitalization were the t test (Guilford, 1956) and the correlation of residual gain scores. The former method was used to measure whether there was any significant difference between the pre- and post-treatment scores. The latter method was employed to estimate whether there was any significant relationship between changes measured by the objective tests and the MAT.

Findings

Multivariate Analysis

The one-way multivariate analysis of variance with respect to the MAT Motivation scores and the MAT Conflict scores was significant beyond the .01 level by means of

Rao's approximate F test using Wilk's Lambda. The result indicated that the three clinical groups and the control group were different when all variables taken simultaneously were analyzed.

A test for parallelism of the MAT mean profiles of the experimental group and the control group with respect to the MAT Motivation scores and the MAT Conflict scores was also significant beyond the .01 level by means of Rao's approximate F test using Wilk's Lambda. The results are presented graphically in Figures 1 and 2. The outcomes of the profile analysis indicated that the MAT profiles of the depressives, chronic schizophrenics, alcoholics and the normal controls in reference to the MAT Motivation scores and the MAT Conflict scores were statistically significantly different.

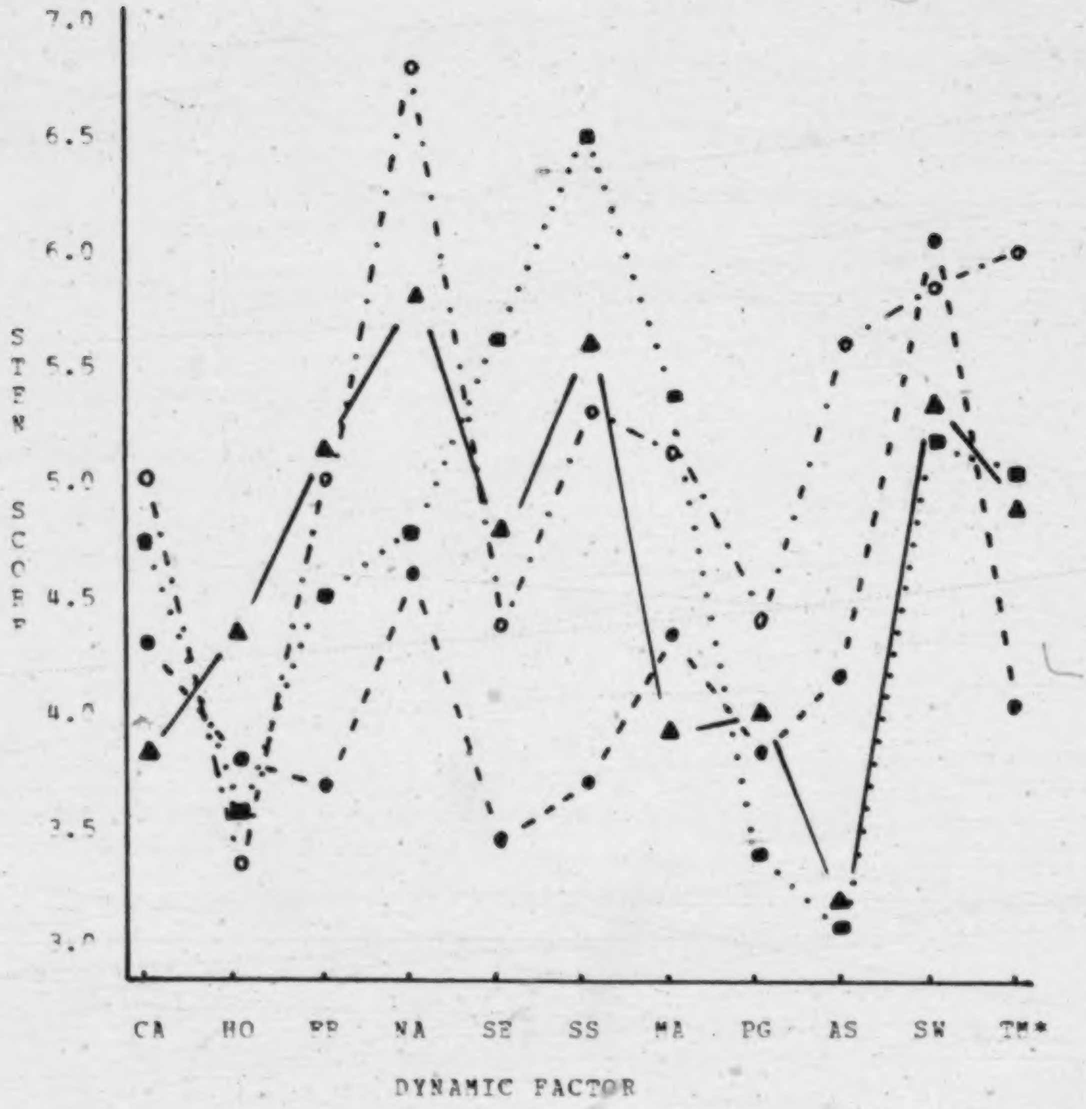

Figure 1 Profiles of the Three Clinical Groups and the Control Group on the MAT Motivation Scores

▲ —— ▲ Depressive group ● - - - ● Schizophrenic group
■ · · · · ■ Alcoholic group ○ — · — ○ Control group

* See Appendix II

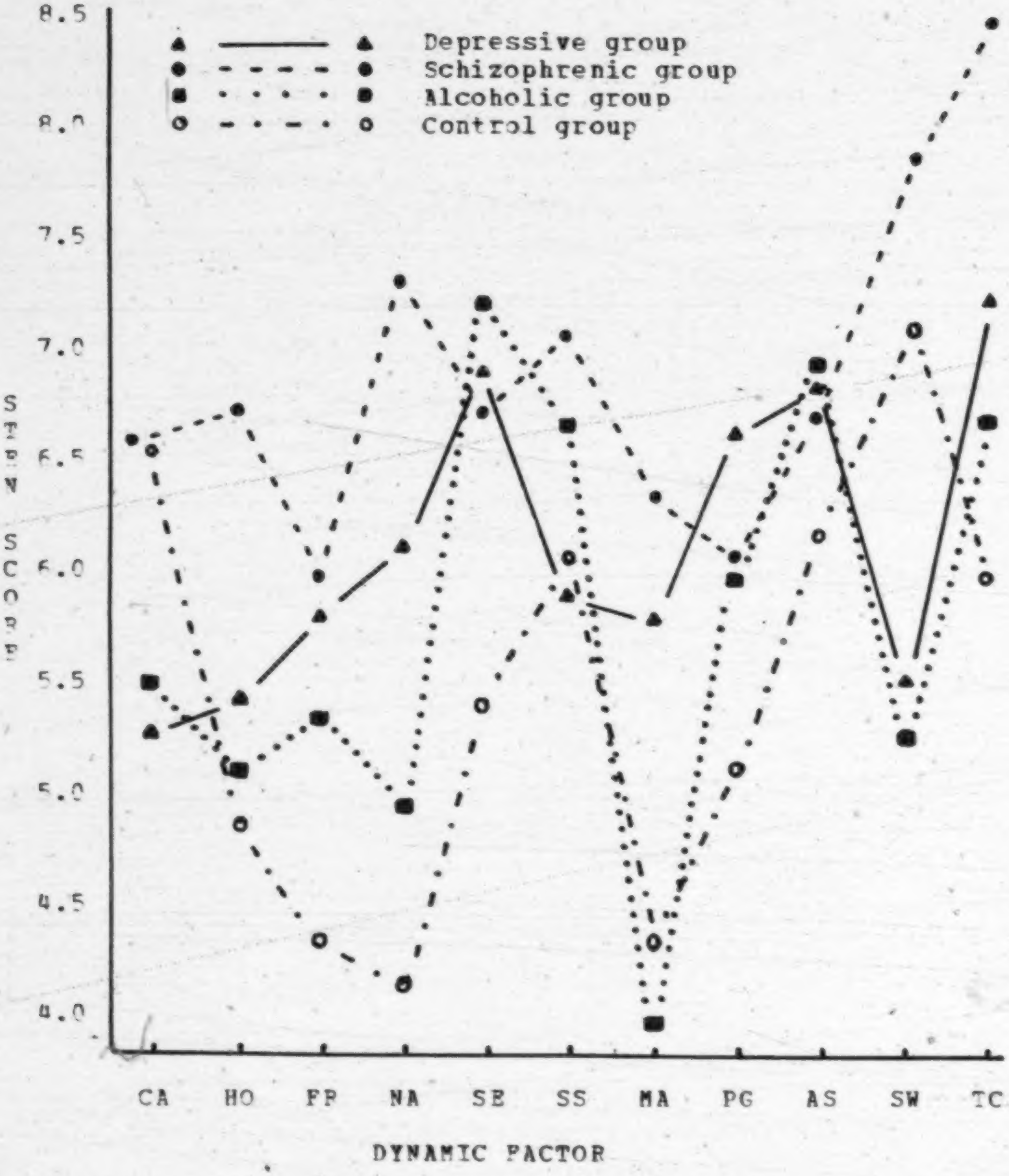

Figure 2 Profiles of the Three Clinical Groups and the Control Group on the MAT Conflict Scores

The means and the standard deviations of the MAT Motivation scores and the MAT Conflict scores for the three clinical groups and the control group were computed in a program for one-way multivariate analysis of variance. These results are reported in Tables VII and VIII.

TABLE VII

MEANS AND STANDARD DEVIATIONS OF THE MAT MOTIVATION SCORES

	DEPRESSIVE		SCHIZOPHRENIC		ALCOHOLIC		CONTROL	
Factor	Mean	S.D.	Mean	S.D.	Mean	S.D.	Mean	S.D.
CA	3.91	2.23	4.31	2.47	4.78	2.41	5.03	2.68
HO	4.38	2.42	3.81	2.31	3.57	2.14	3.41	2.28
FR	5.22	2.42	3.72	2.63	4.53	2.37	5.00	2.61
NA	5.88	2.90	4.99	2.39	4.81	2.61	6.84	2.86
SE	4.78	2.54	3.53	2.29	5.56	2.20	4.34	2.12
SS	5.59	2.41	3.66	2.43	6.53	2.38	5.34	2.18
MA	3.94	2.42	4.44	2.20	5.44	2.44	5.13	2.55
PG	3.97	2.69	3.91	2.32	3.41	2.54	4.41	2.65
AS	3.22	2.45	4.19	2.69	3.09	2.20	5.59	2.27
SW	5.41	2.66	6.06	2.68	5.09	2.41	5.88	2.60
TM	4.91	1.87	4.03	1.66	4.97	1.71	5.97	1.82

TABLE VIII

MEANS AND STANDARD DEVIATION OF THE MAT CONFLICT SCORES

Factor	DEPRESSIVE Mean	S.D.	SCHIZOPHRENIC Mean	S.D.	ALCOHOLIC Mean	S.D.	CONTROL Mean	S.D.
CA	5.25	2.37	6.63	2.27	5.50	2.42	6.59	2.41
HO	5.41	2.72	6.69	2.72	5.06	2.46	4.84	2.42
FR	5.69	2.35	5.97	2.92	5.34	2.79	4.28	2.44
NA	6.09	2.49	7.31	2.32	4.91	2.61	4.19	2.72
SE	6.90	2.08	6.72	2.48	7.22	1.66	5.38	2.41
SS	5.84	1.90	7.06	2.26	6.56	2.31	6.03	2.69
MA	5.78	2.22	6.34	2.39	4.00	2.06	4.28	1.99
PG	6.63	2.24	5.91	2.39	5.88	2.35	5.06	2.33
AS	6.72	2.49	6.63	1.76	6.78	1.54	6.09	2.16
SW	5.50	2.60	7.75	2.08	5.22	2.18	7.06	1.92
TC	7.22	1.21	8.53	1.05	6.56	1.54	5.88	1.52

Univariate Analysis

Significant differences among the depressive, schizophrenic, alcoholic and control groups on the MAT Motivation scores were indicated by Scheffé's test on the following variables: Narcism-comfort Erg, Superego Sentiment, Self-control Sentiment, Assertiveness Erg and Total Motivation.

TABLE IX

SIGNIFICANT SCHEFFÉ TESTS ON THE MAT MOTIVATION SCORES AMONG THE THREE CLINICAL GROUPS AND THE CONTROL GROUP

Group	Schizophrenic	Alcoholic	Control
Depressive	SS-*		AS+**
Schizophrenic		SS+** SE+**	SS+* NA+* TM+**
Alcoholic			AS+** NA+*

*p<.05
**p<.01

Note: A plus means that the group at the column head average higher than the group for the row. A minus indicates the converse.

The control group scored higher than the depressive group on Assertiveness Erg.

The normals had higher scores on the Narcism-comfort Erg, Self-concept Sentiment and Total Motivation than the schizophrenics.

The control group exceeded significantly the alcoholic group on Narcism-comfort Erg and Assertiveness Erg.

The depressives scored higher than the schizophrenics on Self-concept Sentiment.

The alcoholics scored higher than the schizophrenics on

Self-concept Sentiment and Superego Sentiment.

Significant Scheffé tests among the depressive, schizophrenic, alcoholic and control groups on the MAT Conflict scores were found on the following variables: Home-parental Sentiment, Narcism-comfort Erg, Superego Sentiment, Mating Erg, Sweetheart-spouse Sentiment and Total Conflict.

The depressive group exceeded significantly the control group on Narcism-comfort Erg and Total Conflict. However, the control group scored significantly higher than the depressive group on Sweetheart-spouse Sentiment.

The schizophrenics had significantly higher conflict scores than the normals on Narcism-comfort Erg, Total Conflict, Mating Erg and Home-parental Sentiment.

TABLE X

SIGNIFICANT SCHEFFÉ TESTS ON THE MAT CONFLICT SCORES AMONG THE THREE CLINICAL GROUPS AND THE CONTROL GROUP

Group	Schizophrenic	Alcoholic	Control
Depressive	SW+*** TC+***	MA-*	NA-* SW+* TC-**
Schizophrenic		NA-** MA-** SW-** TC-**	HO-* NA-** MA-** TC-**
Alcoholic			SE-* SW+*

*$p<.05$
**$p<.01$

Note: A plus sign by a factor symbol means the group at the column head is higher. A minus indicates the converse.

The alcoholic group scored higher than the control group on Superego Sentiment but lower on Sweetheart-spouse Sentiment.

The depressives scored lower than the schizophrenics on Sweetheart-spouse Sentiment and Total Conflict, but higher than the alcoholics on Mating Erg.

The alcoholic group had significantly lower conflict scores than the schizophrenic group on Narcism-comfort Erg, Sweetheart-spouse Sentiment, Mating Erg and Total Conflict.

Significant effects of sex, age and educational level on the MAT Motivation scores were found on the following variables as sumarized in Table XI: Career Sentiment, Narcism-confort Erg, Self-concept Sentiment, Mating Erg and Pugnacity-sadism Erg.

TABLE XI

SIGNIFICANT EFFECT ON THE MAT MOTIVATION SCORES
DUE TO SEX, AGE, AND EDUCATIONAL LEVEL

		SEX		AGE		EDUCATIONAL LEVEL	
Factor		Male	Female	≤39	≥40	≤Gr.11	≥Gr.12
CA	Mean			3.93	5.07		
	Probability			<.01			
NA	Mean					4.94	6.27
	Probability					<.05	
SS	Mean	4.81	5.58			4.93	5.75
	Probability	<.05				<.05	
MA	Mean			5.25	4.15		
	Probability			<.01			
PG	Mean	4.79	3.09				
	Probability	<.01					

The males scored higher than the females on Pugnacity-sadism Erg but lower on Self-concept Sentiment. Subjects in the younger age group had higher scores on Mating Erg but lower scores on Career Sentiment than subjects in the older age group. Subjects with grade 12 or higher education scored higher on Narcism-comfort Erg and Self-concept Sentiment than subjects with grade 11 or less education.

With respect to the MAT Conflict scores, significant effects due to sex or age or education were found on Career Sentiment, Fear Erg and Pugnacity-sadism Erg.

TABLE XII

SIGNIFICANT EFFECT ON THE MAT CONFLICT SCORES DUE TO SEX, AGE, AND EDUCATIONAL LEVEL

	SEX		AGE		EDUCATIONAL LEVEL	
Factor	Male	Female	≤39	≥40	≤Gr. 11	≥Gr. 12
HO Mean	5.99	4.90	5.03	5.95		
Probability	<.05		<.05			
PG Mean			6.51	5.21		
Probability			<.01			
FR Mean					5.75	4.50
Probability					<.01	

Males had higher conflict scores on Career Sentiment than females. The younger age group had higher conflict scores on Pugnacity-sadism Erg but lower conflict scores on Home-parental Sentiment than the older age group. Subjects with Grade 11 or less education scored higher on Fear Erg than subjects with Grade 12 or higher education.

The interaction between sex and classification groups on Career Sentiment was found significant beyond the .01

level. The data presented in Figure 3 indicates that males in the control group scored higher than females in the control group on Career Sentiment, while males in the schizophrenic group scored lower than schizophrenic females.

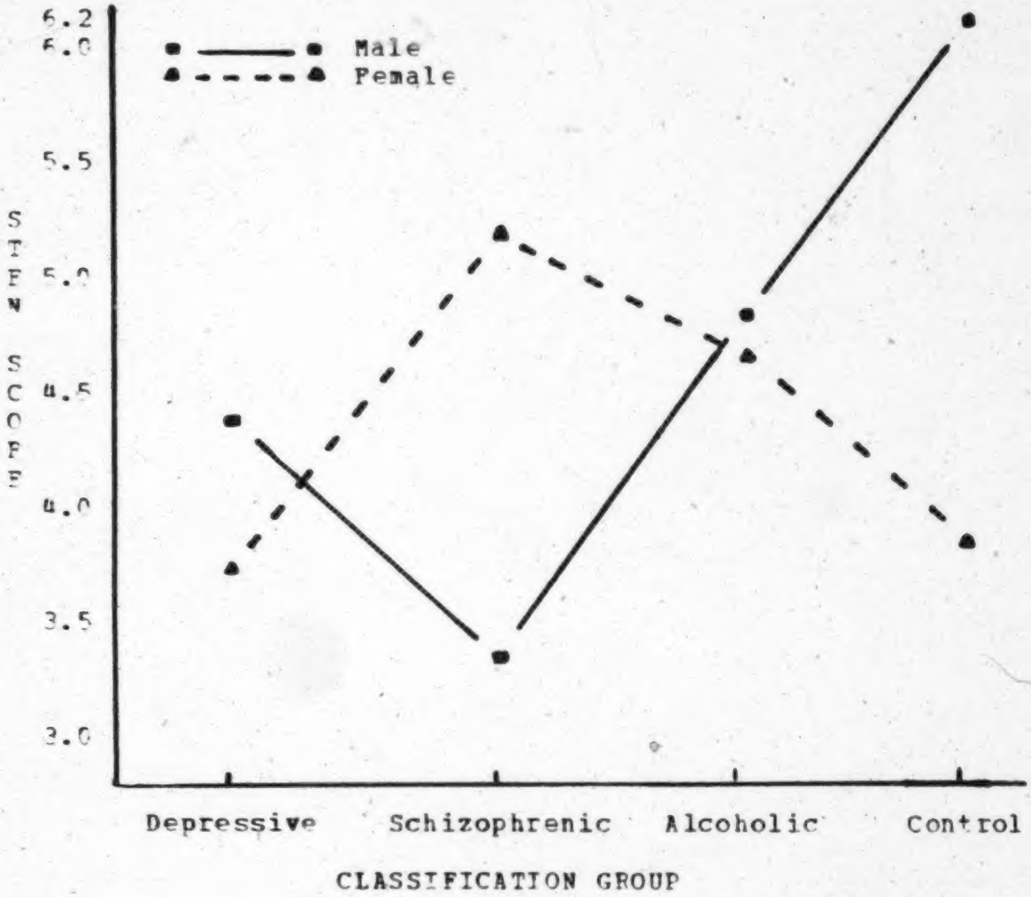

Figure 3 Interaction between Sex and Classification Group on Career Sentiment

The data illustrated in Figure 4 indicates that normals with higher education had higher score on Mating Erg than normals with lower education, while alcoholics with lower education scored higher than those with lower education. The interaction between the educational level and groups on Mating Erg was significant at the .01 level.

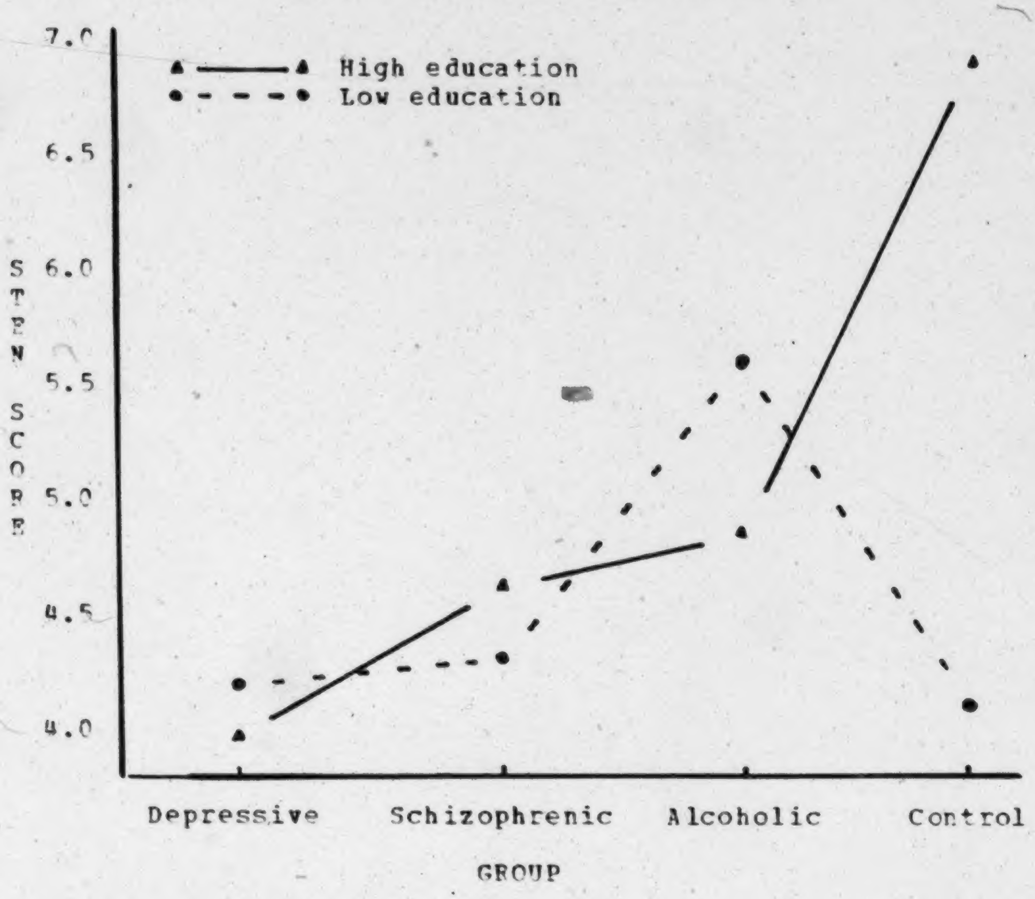

Figure 4 Interaction between Educational Level and Group on Mating Erg

Measurement of Change

A t test between the pre- and post-treatment scores of the Beck Depression Inventory and the Hamilton Rating Scale was found to be significant beyond the .01 level. No significant difference was indicated between the pre- and post-treatment scores of the Motivation Analysis Test.

A significant relationship beyond the .01 level was obtained between the Beck Depression Inventory and the Hamilton Rating Scale. The correlation was .65. However, no significant relationship was found between the MAT and the Beck Depression Inventory or the Hamilton Rating Scale.

CHAPTER V

ANALYSIS OF RESULTS, DISCUSSION, AND CONCLUSION

Analysis of Results

Motivation

Hypothesis I: On the Motivation score, the depressive group will score lower on Self-concept Sentiment, Mating Erg, Assertiveness Erg and Total Motivation than the control group, but higher on Narcism-comfort Erg, Pugnacity-sadism Erg, and Superego Sentiment.

Results. The depressive group did score lower on Assertiveness Erg than the control group. The hypothesis concerning the scores on Narcism-comfort Erg, Superego Sentiment, Self-concept Sentiment, Mating Erg, Pugnacity-sadism Erg and Total Motivation were not supported by the results of the present investigation.

Hypothesis III: On the Motivation score, the schizophrenic group will score significantly lower on Assertiveness Erg, Superego Sentiment, Self-concept Sentiment and Total Motivation, but higher on Narcism-comfort Erg than the control group.

Results. The schizophrenic group scored lower than the normals on Self-concept Sentiment, Total Motivation and

Narcism-comfort Erg. The significant results on Narcism-comfort Erg were opposite to what was hypothesized. The assumption that scores between the two groups on Assertiveness Erg and Superego Sentiment would differ was not supported by the present data.

Hypothesis V: On the Motivation score, the alcoholics will be low in Assertiveness Erg, Self-concept Sentiment and Total Motivation, but high in Fear Erg, Pugnacity-sadism Erg and Narcism-comfort Erg compared to the control group.

Results. The alcoholic group scored lower than the control group on Assertiveness Erg. However, the latter scored higher than the former on Narcism-comfort Erg, which was opposite to what was predicted. The assumption that scores by the two groups on Fear Erg, Self-concept Sentiment, Pugnacity-sadism Erg and Total Motivation would differ was not supported by the present analysis.

It is interesting to note that the schizophrenics not only scored significantly lower than the normals, but also lower than the depressives and the alcoholics on Self-concept Sentiment.

Conflict

Hypothesis II: On the Conflict score, the depressive group will exceed the normal group on Narcism-comfort Erg, Superego Sentiment, Self-concept Sentiment, Mating Erg, Pugnacity-sadism Erg, Assertiveness Erg and Total Conflict.

Results. The depressive group exceeded the control group on Narcism-comfort Erg and Total Conflict. The hypothesis concerning the scores on Superego Sentiment, Self-concept Sentiment, Mating Erg, Pugnacity-sadism Erg and Assertiveness Erg was not supported by the present analysis.

Hypothesis IV: On the Conflict score, scores on the chronic schizophrenic group will be significantly higher than the control group on Narcism-comfort Erg, Superego Sentiment, Self-concept Sentiment, Assertiveness Erg, and Total Conflict.

Results. The scores of the schizophrenic group were significantly higher than the control group on Narcism-comfort Erg and Total Conflict. The prediction concerning scores on Superego Sentiment, Assertiveness Erg, and Self-concept Sentiment was not supported by the present investigation.

Hypothesis VI: On the Conflict score, the alcoholics will score higher than the normals on Fear Erg, Narcism-comfort Erg, Self-concept Sentiment, Pugnacity-sadism Erg, Assertiveness Erg, and Total Conflict.

Results. The hypothesis formulated with respect to the differences between the conflict scores of the alcoholics and normals was rejected.

The control group exceeded the depressive and alcoholic groups on Sweetheart-spouse Sentiment.

Discussion

Among the significant results obtained on the different motivational factors, the trends on the Total Motivation score, Total Conflict score and Assertiveness Erg were of particular interest.

The depressives and the alcoholics obtained a statistically significant lower score than the normals on Assertiveness Erg. The score of the schizophrenics was also lower than that of the normal group. This result supports the clinical observation that psychiatric patients, especially those in the three classifications mentioned above, do not show themselves to be striving for achievement, and appear to lack ambition and a spirit of competition.

On Total Motivation score, the control group scored significantly higher than the schizophrenic group. The control group score also exceeded the scores of the depressive and alcoholic groups. On the Total Conflict score, the scores of the clinical groups exceeded that of the control group, although the difference between the alcoholic and control groups' scores was not statistically significant.

The Total Motivation score was interpreted by Cattell (1964) as object libido investment or the total capability of a person to become interested in his world or to adapt to his environment. This score was also suggested as a measure of mental health.

The conflict model used in the MAT postulates the unintegrated motivational component exceeding the integrated motivational component. In other words, the wishful, not yet reality tested motivational component dominates the reality tested motivational component (Cattell, 1957; Delhees, 1968). The Total Conflict score was suggested for research purposes as a possible index of psychiatric maladjustment (Cattell, 1964; Delhees, 1968).

The present study provided evidence to support the possible diagnostic value of the Total Motivation score and the Total Conflict score. The present results also suggest that a MAT record with high Total Conflict score and low Total Motivation score could be considered pathological.

If one accepts the Freudian assumption that the psychic process in normals, in neurotics and in psychotics manifests a fundamental unity, or that the psychological differences among them are one of degree rather than of kind (Brenner, 1955; Arlow and Brenner, 1964), a Motivation Analysis Test record with a low Total Motivation score and a high Total Conflict score when interpreted alone merely reflects the fact that the individual is in a traumatic state in which the amount of instinctual energy which has accumulated is too great for the ego to bind or to discharge. The emotion which accompanies the traumatic state or the intense unpleasant state is named anxiety. It is anxiety which is responsible for the appearance of conflict between the different personality structures. The consequence of conflict could be normal when the ego uses successful defenses. It could be pathological or abnormal when the ego employs unsuccessful defenses such as neurotic or psychotic symptom formation (Arlow and Brenner, 1964).

In the May and Sweney study (1965) referred to earlier, it was found that thirty schizophrenics scored higher than a normal group on Total Conflict, Self-concept Sentiment and Superego Sentiment. In the present investigation, schizophrenic subjects scored higher than normals on Total Conflict but not on the other factors.

Conclusion

In a volume on multivariate personality research edited by R.M. Dreger (1972) in honor of Cattell's contribution to the understanding of personality, Radcliffe raised a methodological problem concerning the Motivation Analysis Test. The central problem is whether or not the ipsatization procedure is an accurate statistical tool in motivational measurement. Therefore, the results of the present study are tentative and explorative in nature and not conclusive.

A cross validation study is recommended in order to rule out the possibility that the results of the present investigation merely reflect the characteristics of this particular sample.

Significant results of the MAT Motivations scores were obtained among the three clinical groups and the control group on Self-concept Sentiment, Superego Sentiment, Narcism-comfort Erg, Assertiveness Erg and Total Motivation.

Significant differences of the MAT Conflict scores were found among the three clinical groups and the control group on the following factors: Home-parental Sentiment, Superego Sentiment, Sweetheart-spouse Sentiment, Narcism-comfort Erg, Mating Erg and Total Conflict.

The control group scored higher than the three clinical groups on the Total Motivation score but lower on the Total Conflict score. The present study, however, did not yield any significant difference between the pre- and post-treatment Motivation Analysis Test scores.

It may be concluded, therefore, that the present study has shed some light on the potential use of the MAT as a diagnostic, but not as a prognostic instrument in the clinical field. The present research also provided supportive evidence that the MAT Total Motivation score could be used as a measure of mental health, and that the MAT Total Conflict score could be interpreted as an index of psychiatric maladjustment as proposed by Cattell.

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APPENDICES

APPENDIX I

CHECK LIST OF SYMPTOMS OF DEPRESSIVE STATES

Item No.	Range of Scores	Symptom	
1	0-4	Depressed Mood	
		Gloomy attitude, pessimism about the future	
		Feeling of sadness	
		Tendency to weep	
		Sadness, etc.	1
		Occasional weeping	2
		Frequent weeping	3
		Extreme symptoms	4
2	0-4	Guilt	
		Self-reproach, feels he has let people down	1
		Ideas of guilt	2
		Present illness is a punishment	3
		Delusions of guilt	
		Hallucinations of guilt	4
3	0-4	Suicide	
		Feels life is not worth living	1
		Wishes he were dead	2
		Suicidal ideas	3
		Attempts at suicide	4
4	0-2	Insomnia, initial	
		Difficulty in falling asleep	
5	0-2	Insomnia, middle	
		Patient restless and disturbed during the night	
		Waking during the night	
6	0-2	Insomnia, delayed	
		Waking in early hours of the morning and unable to fall asleep again	

Item No.	Range of Scores	Symptom
7	0-4	Work and Interests Feelings of incapacity Listlessness, indecision and vacillation loss of interest in hobbies Decreased social activities Productivity decreased Unable to work Stopped working because of present illness only 4
8	0-4	Retardation Slowness of thought, speech, and activity Apathy Stupor Slight retardation at interview .... 1 Obvious retardation at interview ...... 2 Interview difficult .... 3 Complete stupor 4
9	0-4	Agitation Fidgetiness at interview .... 1 Obvious restlessness with picking at hands and clothes .... 2 Patient has to get up during the interview .... 3 Pacing up and down, picking at his face and hair and tearing at his clothes ... 4
10	0-4	Anxiety, psychic Tension and irritability Worrying about minor matters Apprehensive attitude Fears
11	0-2	Anxiety, somatic Gastrointestinal, wind, indigestion Cardiovascular, palpitations, headaches Respiratory, genito-urinary, etc.
12	0-2	Somatic Symptoms, Gastrointestinal Loss of appetite Heavy feelings in abdomen Constipation

Item No.	Range of Scores	Symptom
13	0-2	Somatic Symptoms, General heaviness in limbs, back, or head diffuse backache loss of energy and fatiguability
14	0-2	Genital Symptoms Loss of libido
15	0-4	Hypochondriasis Excessive preoccupation with bodily functions is the essence of a hypochondriacal attitude Trivial or doubtful symptoms .... 1 Much preoccupation with physical symptoms and with thoughts of organic desease 2 Strong convictions of the presence of some organic disease .... 3 Hypochondriacal delusions 4
16	0-2	Loss of Weight
17	0-2	Loss of Insight Loss of insight .... 2 Partial or doubtful loss .... 1 No loss 0

APPENDIX 2

CODE TO DYNAMIC FACTORS MEASURED IN MAT

CA	Career Sentiment
HO	Home-parental Sentiment
FR	Fear Erg
NA	Narcism-comfort Erg
SE	Superego Sentiment
SS	Self-concept Sentiment
MA	Mating Erg
PG	Pugnacity-sadism Erg
AS	Assertiveness Erg
SW	Sweetheart-spouse Sentiment
TM	Total Motivation
TC	Total Conflict

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08:44.42 1.277 RC=0
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